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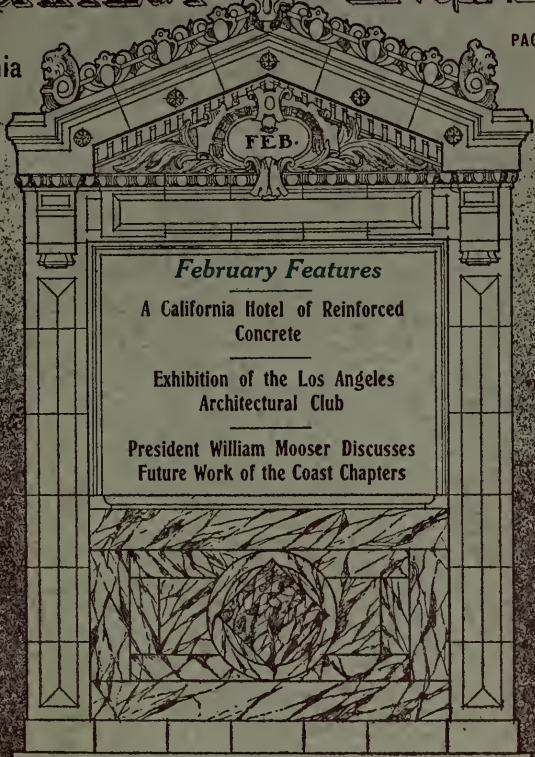

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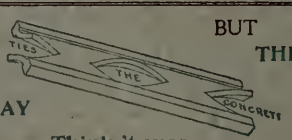

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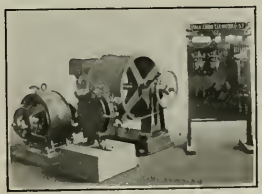

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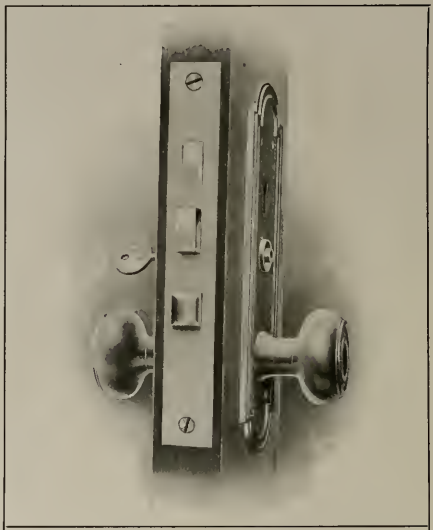

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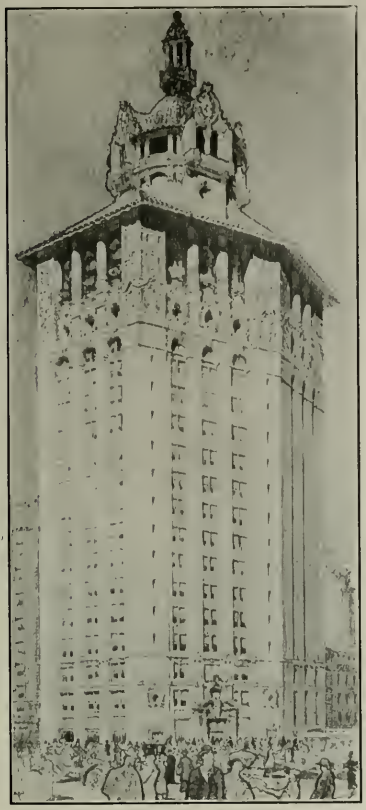

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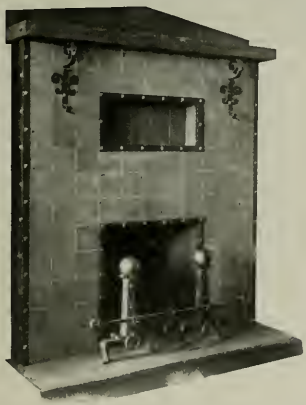

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Western Builders' Supply Co.,
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Eastern Reinforced Tray Co.,
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First St. and Broadway, Oakland

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The Enos Company..1748 California St., S. F.
Adams & Hollopeter....745 Mission St., S. F.
Morrison Electric Co.,
291 Morrison St., Portland

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Boyd & Moore.....356 Market St., S. F.

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Seventeenth and De Haro Sts., S. F.

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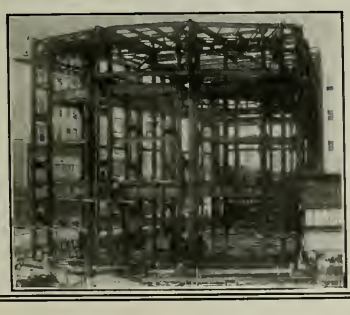
523 Market St., S. F.
Machinery and Electrical Co.,
351 N. Main St., Los Angeles
Steiger & Kerr Stove & Foundry Co.,
Folsom and 17th Sts., S. F.

MAGNESITE
California Magnesite Co.,
Slauson Ave., Los Angeles

MAILING CASES
Mailing Case Mfg. Co., 264 Natoma St., S. F.



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W. W. Montague & Co., 557 Market St., S. F.

MARBLE
Joseph Musto Sons—Keenan Co., 535-565 North Point St., S. F.
Italian & American Marble Works, Sixteenth and Carolina Sts., S. F.
Columbia Marble Co., 268 Market St., S. F.
Vermont Marble Works, Brannan St., S. F. 587-591 Market St., S. F.

MASONS.
T. F. O'Rourk.....180 Jessie St., S. F.
Ferdinand Wagner.....607 Waller St., S. F.

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Goodyear Rubber Company,

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Thomas Morrin.....Balboa Bldg., S. F.

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Doak Sheet Steel Co....Sheldon Bldg., S. F.

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Waterhouse & Price.....59 Third St., S. F.

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San Francisco Metal Stamping & Corrugating Co....Treat Ave. and 19th St., S. F.
Doak Sheet Steel Co....Sheldon Bldg., S. F.

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The Lindley Oil Burner, represented by Long & Long.....724 San Pablo Ave., Oakland

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C. F. Weber & Co., 365 Market St., S. F.

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Western Builders' Supply Co., 680 Mission St., S. F.

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Sartorius Co., Inc..16th and Utah Sts., S. F.

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Adamant Cement, Brick and Plaster Coating. Made by Parker, Preston & Co., Inc.

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Glidden Varnish Co.....Cleveland, Ohio
Standard Varnish Works, represented by W. P. Fuller & Co....S. F. and Los Angeles

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R. J. Waters Co.....717 Market St., S. F.
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Gabriel Moulin.....153 Kearny St., S. F.

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D. Ross Clarke.....708 Pacific Bldg., S. F.

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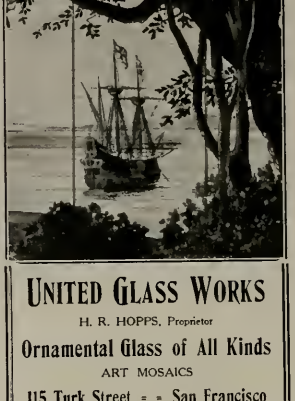
J. E. O'Mara.....447 Minna St., S. F.
Silva Heating & Plumbing Co., 140 First St., S. F.



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ARCHITECTS' SPECIFICATION INDEX *Continued*

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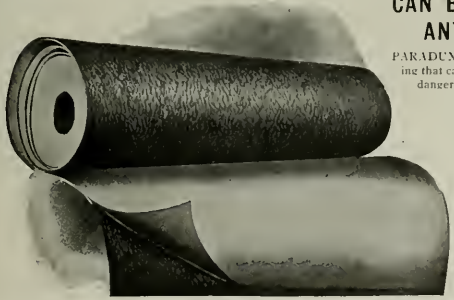

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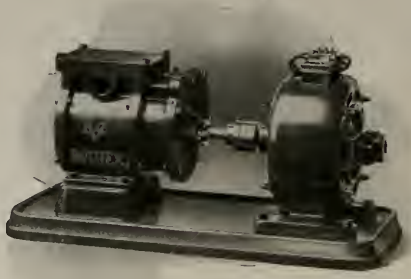

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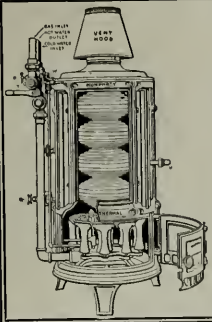

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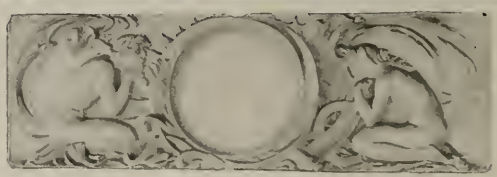

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Contents for February

	PAGE
Hotel Sacramento — *Sellon & Hemmings, Architects*	*Frontispiece*
A California Hotel of Reinforced Concrete — *C. W. Whitney*	35
Illustrated	
Anent the Next Convention of the American Institute	47
Splendid Exhibition of the Los Angeles Architectural Club — *Henry F. Withey*	49
Illustrations from the Exhibition	
The Interior Decorations of School Houses — *Walter J. Kenyon*	61
The Second Class Rate and the Postal Deficit	67
A House Built of Hollow Tiles	69
Metal Lath for Outside Plastering	69
Ruminations and Cogitations — *F. W. Fitzpatrick*	71
New Code of Ethics of the American Institute	74
For the Good of Architecture — *William Mooser, President of San Francisco Chapter, A. I. A.*	76
Architectural League of the Pacific Coast	79
Comparative Cost of Constructing Two Identical Reinforced Concrete Buildings — *Mason D. Pratt*	81
Advanced Ideas and Possibilities for the Future of San Francisco	85
The New Art in Lighting Fixtures	87
Illustrated	
The Handsomest Cafe in the World	92
Among the Architects	95
Editorial	98
Heating and Lighting	100
By the Way	109

THE HOTEL SACRAMENTO, SACRAMENTO, CALIFORNIA
Sellon & Hemmings, Architects

Frontispiece.
The Architect and Engineer of California
February, 1910

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THE
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Of California
Pacific Coast States

VOL. XX. FEBRUARY, 1910. No. 1.

A California Hotel of Reinforced Concrete*

By C. W. WHITNEY.

SACRAMENTO has recently added to its realty possessions a modern, first-class hostelry, styled the Hotel Sacramento, which is not only a credit to the capitol of the State of California and the metropolis of the Sacramento and San Joaquin Valleys, but which also would do credit to any city in the country. The new structure not only admirably fills the needs of the traveling public, but also fully satisfies the expectations of the local business men who have made the project possible.

The hotel is well situated with respect both to the present and future requirements of the city. Covering a lot 160 feet by 140 feet at the southeast corner of Tenth and K streets, the building is directly in the line of growth of the business section of the city, being about equi-distant from the Western Pacific depot and the Southern Pacific depot. A block to the south is the State Capitol with its beautifully parked grounds, while two blocks away is the terminus of the Northern Electric Railway, which is building up a constantly increasing passenger traffic in the Sacramento Valley. Local street railway lines also pass the hotel on both streets.

The building is a noteworthy one, both in point of construction and architectural treatment. It is built entirely of reinforced concrete and is one of the few hotel structures of its type in California. This construction, in addition to giving great stability and durability to the building, also affords an opportunity to bring out artistic embellishments sufficient to present a very pleasing facade. No stone or imitation stone is used, a white cement plaster set off with simple but ornamental inlay of brick being employed for the exterior finish.

The advantages of reinforced concrete construction have frequently been set forth in these pages, but a few notes regarding its use in this class of building may be of interest. Considering the bare reinforced concrete structure, without interior or exterior finish or mechanical equipment, there are the same advantages afforded in the way of strength, durability, fireproof qualities and earthquake-proof and water-proof qualities as would have been obtained from a Class-A structure with structural steel frame fireproofed with concrete, while the latter would have cost a third more than the reinforced concrete frame. The concrete structure also has the advantage of being free from vibration, being monolithic in character, of being practically as good a fire risk and requiring considerably less time in its erection. As compared with Class-C construction, reinforced concrete as used in the Hotel Sacramento offers the advantages of greater fire

*Photos by Gabriel Moulin, San Francisco.

Hotel Sacramento. Detail of Main Entrance

Hotel Sacramento, Main Entrance to Loggia

and earthquake protection, lower insurance rates, durability and freedom from repairs and renewals.

In the construction of the Hotel Sacramento not a stick of timber was used and no wood except for the doors, windows and interior trim. Built up of reinforced concrete column, beam and girder construction, with reinforced curtain walls and floor slabs, provision was made in the design so that an additional story may be added at some future time. A feature of the construction that has been highly appreciated in Sacramento, where considerable damage to buildings has been done in the past by floods, is the fact that the basement is absolutely watertight and waterproof. Another point that is a beneficial one from a hotel standpoint is that the concrete structure is almost entirely impervious to extreme heat and cold and consequently in the excessive hot weather that frequently assails Sacramento in the summer months, the Hotel Sacramento affords a cool and luxurious retreat.

The building is five stories in height with a basement covering the entire lot. The architecture throughout tends to the Mission style, the effect being accentuated by an attractive and ornamental roof garden and by open balconies at the mezzanine and fourth floor levels on both street fronts. The roof garden is covered on the two street sides by a rustic pergola which is roofed with red terra cotta Spanish tile. This garden, with its ample facilities for catering to a large number of people, will undoubtedly prove to be a very popular resort for evening gatherings during the hot summer months.

The main entrance to the hotel is on Tenth street through an open loggia paved with Welsh quarries tile and set off by massive concrete columns and with ornamental brick inlays above. Passing through a copper finished revolving door, one enters a spacious lounging hall and from that passes into the main lobby, these two portions of the main floor, together with the clerks' desk, check rooms, cigar stands, reception room, etc., occupying a space 60 feet square. The finish of this public portion of the hotel is carried out in Sienna marble with scagliola wainscoting and columns to match, while the wood work is natural finished jenisero, the metal trimmings being of bronze, and the floor of ornamental ceramic tile. The color scheme of this portion of the building has been very happily chosen, consisting of buff in the floor, the natural creams and brown tints in the marble and scagliola, and old ivory in the plaster ceiling and balustrade, while the light from the large interior court streaming through the amber glass of the ceiling light blends it all into a harmonious and beautiful effect. A separate ladies' entrance is provided through a corridor from K street, where an elaborate marquis of ornamental iron and art glass protects guests arriving in carriages.

From one end of the main lobby, entrance is gained through French sash doors into the main dining-room. This room, 44 feet by 85 feet in size, and two stories in height, is one of the most attractively appointed dining-rooms in the State. It has two street exposures, a double row of round concrete columns to carry the floor above, and a musicians' balcony at one end.

In the rear of the main dining-room is located the kitchen, which is large and conveniently arranged, being equipped with French ranges, boilers, steam table, refrigerating boxes, serving tables, chef's pantry and all the necessary culinary equipment. Other rooms on the first floor comprise a well-appointed banquet room with rich wall tapestries and art glass ceiling lights, officers' dining-room, reception hall, parlor, etc. Along the

Hotel Sacramento. View Taken During Construction, Showing

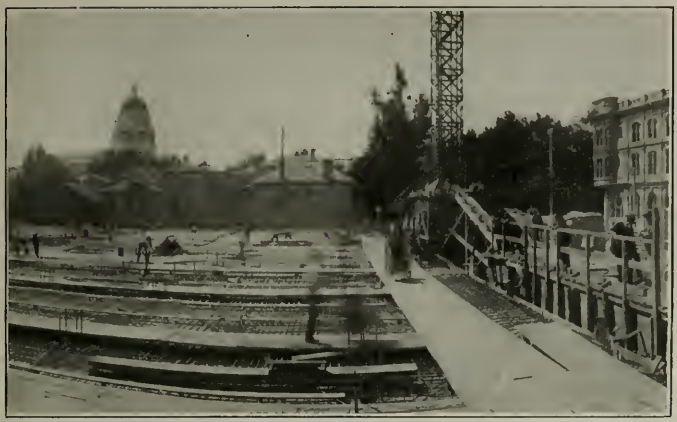
K street side of the building are located seven stores, each about 16 feet by 60 feet in size, which afford a substantial income to the lessee.

On the mezzanine floor are two sets of club rooms, each with its separate reception room, billiard room, card room, open balcony, steward's office, vestibule, etc. One of these is occupied by the University Club. Also on this floor, directly above the lounging hall, opening off the balcony which encircles the upper part of the lobby, and opening on to the front open balcony on the Tenth street side are the ladies' parlor and writing room. Other rooms on this floor comprise card rooms, bookkeeper's office, dining-room, musicians' balcony for dining-room, etc.

The second, third and fourth floors are devoted exclusively to guests' rooms, there being nearly two hundred rooms provided. Most of these have private bath, while connecting doors between rooms are provided with large French plate cheval mirrors. A large open court which furnishes light for the lobby and balcony below, extends through these three floors to the roof and together with a rear court gives lighting facilities for the interior and rear rooms.

On the roof is located the roof garden already mentioned, and auxiliary to it, check rooms, ladies' rooms, and serving room for catering purposes.

In the basement is a grill room about fifty feet square which is to be elaborately decorated and finished in Mission style. Opening off of the grill room and also connecting with the public corridor at the foot of the main stairs, are the bar-room and barber shop. Ten sample rooms, each about 15 feet by 30 feet in size, are located on the street sides of the basement, while the central and rear portions of the floor are taken up by store-rooms, workshop, helps' dining-room, locker rooms for the help, wine room, butcher shop, bake-shop, laundry, heating and ventilating machinery room and boiler room.



Method of Reinforcement and Contractor's Plant at the Right

The partition walls of the building are constructed of hollow terra cotta tile, furring tile being used for the outside concrete walls and columns. The ceilings are furred down with steel channels and metal lath, a 5-foot suspended ceiling being provided over the top floor to provide for ventilating, steam and water pipes. As already mentioned, jenisero is used for the trim of the public lobby and connecting rooms on the first floor, Oregon pine being used for the trim of the remainder of the building. The hotel office partitions, key rack, cashier's grill, etc., are finished in bronze, and thus harmonize well with the color scheme of the lobby.

The mechanical equipment of the building has been designed to meet every requirement for the operation of such a large hostelry. All rooms are steam heated by direct radiation. Ventilation is secured by exhaust fans in the basement and on the roof, which discharge into a large stack the air from the kitchen, laundry and basement rooms and also from the floors above.

The hotel has its own artesian well with pure water sufficient to supply all the needs of the building. Refrigerating apparatus using the ammonia-circulation system is installed to cool the wine-room, serving refrigerator, meat refrigerator, ice cream room, etc. A vacuum cleaning system of the most improved type is installed so that any portion of the building can be quickly cleaned without disturbance or annoyance to guests.

Three electric elevators, one of which can be used as a service elevator for trunks and freight, operate between the basement and the roof garden. The electric lighting work has been designed in accordance with the most modern methods, and whereas it is installed at the present time to operate from the local lighting system, provision is made so that an independent lighting plant can be readily installed in the boiler room. Special attention

Hotel Sacramento. Corridors of Main Lobby
Lighting Fixtures by Adams & Hollopeter, San Francisco

was paid to the lighting fixtures, the designs being all specially executed for this building. A mail chute serves all floors of the hotel and a pneumatic tube system connects the checker in the kitchen with the cashier's desk.

In arranging for the construction of the building the general contractors paid special attention to the installation of a plant, the equipment of which would not only be thoroughly reliable and durable, but which would also insure rapid handling of materials. The principal element of the plant, the concrete mixer and hoisting machine, was designed especially for use on this building and to meet the requirements of heavy, continuous service. It consisted of a No. 2, 1908 model, special combination Ransome concrete mixer, provided with a hoist, all operated by a single electric

Hotel Sacramento. Main Lobby.

Hotel Sacramento. Banquet Room

Hotel Sacramento. The Dining Room

motor. The mixer was set up in its permanent location under the sidewalk and retained there until all the concrete, of which there was some 8,000 cubic yards, had been deposited in the building. Crushed rock and gravel were brought to the site by teams and dumped into large material bins from which they were fed by means of a belt conveyor to a large charging hopper discharging directly into the mixer. From the mixer the concrete was hoisted to the working level, at which it was distributed by means of Ransome concrete carts to the molds.

By reason of the efficient apparatus installed a record was made on September 3, 1908, on which date the contractors placed 381 cubic yards of concrete in eight and three-fourths hours. This work involved the handling of 1,547,600 pounds of material, all of which was hauled from the mixer in ten concrete carts and deposited by ten men, each man thus handling an average of over 75 tons during the day.

The workmanship on the concrete is of the very best, a fact which has been repeatedly emphasized by engineers and contractors who have seen the work and had occasion to test its quality.

The building complete with mechanical equipment and ready for the furnishings cost $350,000, and this with the property represents an invest-

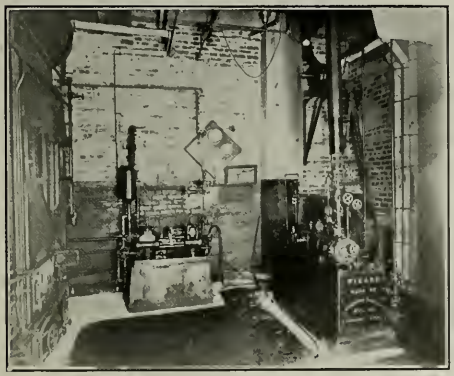
Hotel Sacramento. University Club Rooms

Hotel Sacramento. Roof Garden

Hotel Sacramento. Detail of Stairway

Hotel Sacramento. Typical Guest Room

Hotel Sacramento. Boiler Room



Hotel Sacramento, Showing Refrigerating Plant. Installed by the De Laval Company

Hotel Sacramento. Kitchen and Serving Pantry.

ment on the part of the owners, the Sacramento Hotel Company, of a half million dollars. The Sacramento Hotel Company is formed almost entirely of Sacramento stockholders, who have taken considerable pride in giving their city such a well-appointed and complete hostelry. The board of directors which has managed the enterprise consists of the following:

President, Alden Anderson, ex-Lieutenant Governor and State bank examiner; A. Bonnheim, president Weinstock-Lubin Company; M. R. Beard, ex-mayor; Dr. W. Ellery Briggs, oculist; John Batcher of the Shaw-Batcher Company; D. W. Carmichael, president of the Carmichael Company; ex-Senator M. Diggs, Thomson-Diggs Company; W. H. Devlin, of Devlin & Devlin, attorneys; F. W. Kiesel, cashier California National Bank; Arthur E. Miller, of White, Miller & McLaughlin, attorneys; Harry Thorpe, vice-president Weinstock-Lubin Company. The building committee of this board who had direct personal charge of the work consisted of Messrs. Diggs, Kiesel and Miller.

The Hotel Sacramento is under lease to Albert Bettens, who, as manager of the Hotel St. James in San Jose, and of the California Hotel in San Francisco before the fire, has brought to the new hotel the practical knowledge and ability that was all that was needed to make it the success it has been from the date of its opening last October.

Messrs. Sellon and Hemmings of Sacramento, formerly State architects, were the architects for the building and supervised its construction. Barker, Little & Hall of San Francisco, were consulting engineers on the structural details. The Ransome Concrete Company of San Francisco, Oakland and Sacramento, were the general contractors of the building, their work covering the complete building with all its exterior and interior finishing and mechanical equipment.

Anent the Next Convention of the American Institute

An interesting situation develops from the resolution of the Institute appointing the next convention to be held on the Pacific Coast. Four Pacific Coast cities, Los Angeles, San Francisco, Portland and Seattle, have live, progressive, architectural associations, three of them being chapters of the Institute. Each is taking special interest in the development of its city along civic plan lines, and each would welcome the Institute in an adequate manner. But the convention can only be held in one city, and it is hoped that the embarrassment of the Institute's executive committee in the premises will be appreciated when the decision is made. It is logical that, because of its geographical situation, San Francisco will be the city selected. But no matter where the convention is held it will belong to no one city but to the whole coast, and both Seattle and Los Angeles should be as fully represented as they would were either home town chosen. As it will not in any case be the superior attractions held out by the local societies that will influence the decision, for each have strong and peculiar claims for such recognition, perhaps no better location than Berkeley could be chosen for this, the first convention of the American Institute on the Coast.—Western Architect.

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Bungal—Ode

There's a jingle in the jungle,
Midst the gum trees and the pine;
He is mangling the tangle
Of the undergrowth and vine.
And his blood is all a tingle
At the sound of blow on blow,
As he counts each single shingle
On his bosky bungalow.

There's a jingle in the jungle;
He is counting every nail;
For he says, "'Twill be a haven
Where the world will not assail,
And I dream of every ingle
Where I'll linger at my ease,
Nought to set my nerves a jingle,
I may 'bungle' as I please."

Oh, a true word oft is spoken,
When a man is half in jest;
At the mention of a bungle,
Even though he does his best.
There'll be trouble in that jungle
Where he builds to seek his health;
With his bungalow he'll bungle,
FOR HE'S BUILDING IT HIMSELF!

—Exchange.

Proposed Hotel Building, Los Angeles
Whittlesey & Terwilliger, Architects

The Uses of Wealth *E. H. Blashfield*

Splendid Exhibition of the Los Angeles Architectural Club*

By HENRY F. WITHEY.

ON January 17, 1910, there was opened on the fourth floor of the Hamburger building in Los Angeles the first exhibition of the Architectural League of the Pacific Coast, under the direction of the Los Angeles Architectural Club. This was the third exhibition of the Los Angeles Club, but the first since the formation of the League. From the standpoint of size, variety and excellence of work, the exhibition far excelled anything of the past.

The great interest taken in the exhibition by the public and the impression produced on the visitors seemed to warrant the prediction that there will be a greater advancement in the appreciation of architecture in the future. Progressive as this section of the country has been and is today, there is much that can be done in an educational way to improve the public taste in the matter of building.

An exhibition of this kind seeks that purpose. Not only was there displayed sketches, plans and photographs from most of the architects from Southern California, but in addition there was a most excellent collection of work loaned by the best architects from various parts of the country.

The Eastern work, hung side by side with that of the local architects, gave abundant opportunity for comparison, and it was a pleasure to note that the work of the Los Angeles members of the profession did not suffer by it. Convincing was the evidence that much of the architecture of Southern California compared favorably with that in other sections of the country, particularly in regard to residence architecture.

The exhibition was one that possessed dignity and interest in a very

*Illustrations selected from the Architectural Club's Year Book.

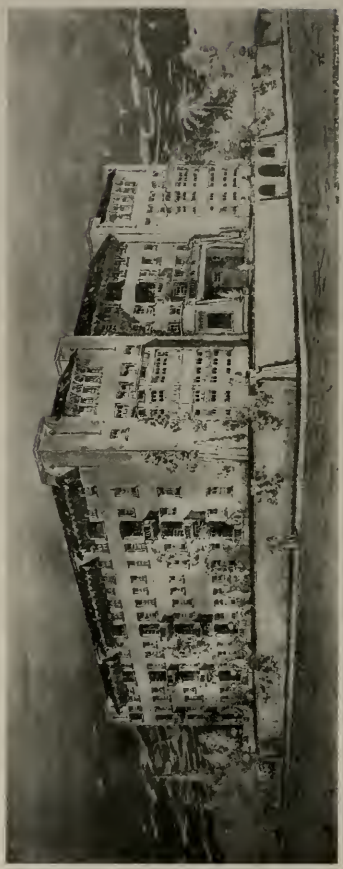
Residence of General J. P. Story, Oak Knoll, California
Robert O. Farquhar, Architect

Residence for Mr. Gilbert Perkins, Oak Knoll, California.
Myron Hunt and Elmer Grey, Architects

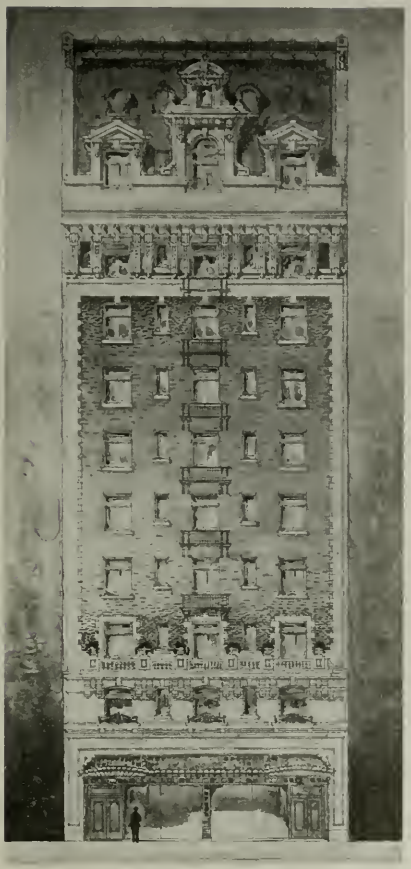
U. S. Grant Hotel, San Diego, California
Harrison Albright, Architect

Glenwood Inn, Riverside California
Arthur Benton, Architect

Brooklyn Heights School, San Diego, California — John C. Austin, Architect

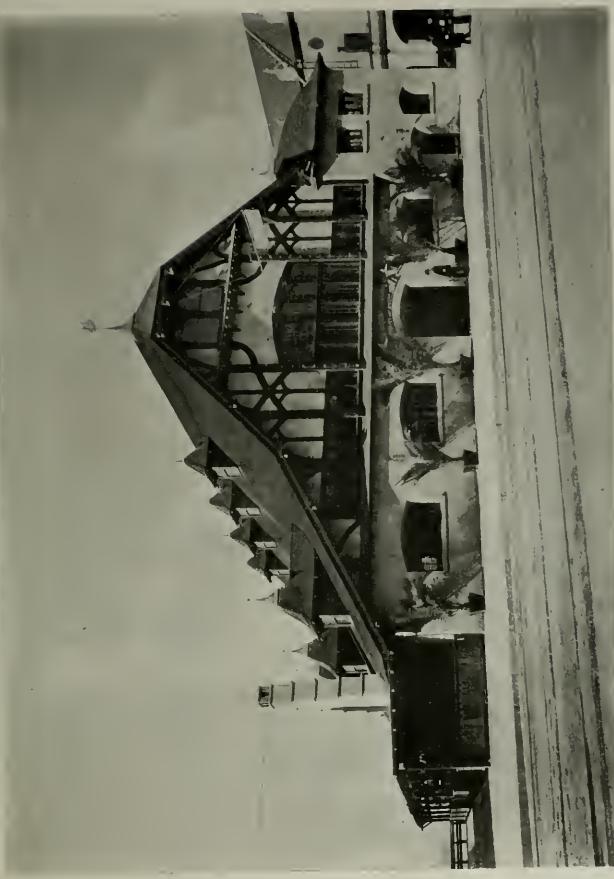


Proposed Apartment House, Los Angeles — Albert R. Walker, Architect



Sketch for Hooker Building, Los Angeles
Parkinson & Bergstrom, Architects

New Baltimore Hotel, Los Angeles — *Arthur Roland Kelly, Architect*



Casino, Redondo Beach, California

Edward C. Kent, Architect

Hamburger Store Building, Los Angeles *Alfred F. Rosenheim, Architect*

International Savings Bank Building, Los Angeles

Faced with Carnegie Brick and Terra Cotta *H. Alban Reeves, Architect*

Apartment Hotel, Los Angeles, J. Wesley Clark and John C. Austin, Architects

unusual degree. The majority of the exhibits had beneath the dress with which they had been endued for exhibition purposes—whether to please the taste of the public or to satisfy that of a prospective or actual client,—a frame work of real architectural worth. It was the perception that this architectural worth was there and would exist in the executed buildings, that it was not a mere matter of pen, brush and paper, clever draughtsmanship and knowing tricks, that caused one to feel that there was abundant evidence of real advancement in architecture and that the various schools of architecture have not been founded in vain.

The trivial, the common-place and the purely vernacular either had not been offered to the judges, or else they had the courage to reject them. There was hardly a number which had not sufficient merit to warrant the committee in giving it a place.

It was in color work that the exhibition was peculiarly strong. The drawing in water color of the Huntington residence by Messrs. Myron Hunt and Elmer Grey gave a strong impression to the visitor, also their drawings of the Throop Polytechnic Institute and the plaster model for same by Alexander Sterling Calder.

Los Angeles County Historical Museum, Los Angeles — *Hudson & Munsell, Architects*

Ebell Club House, Los Angeles
Hunt, Eager & Burns, Architects

The colored European sketches by Arthur Roland Kelly were most interesting, as were the pencil sketches by W. A. Sharp.

Robert D. Farquhar showed photographs of two residences in Pasadena that exemplified exceedingly good taste and careful study, the result of good technical training.

The work of Greene & Greene, Pasadena, was most excellently shown by a number of photographs.

Practically every architect represented had something worthy of mention.

Aside from the architectural work, there were some fifty original drawings and etchings from the hand of Joseph Pennell.

There was also a large collection of the original drawings and studies by Edwin Howland Blashfield, one of America's most noted mural painters. This collection alone attracted a large number to the exhibition, and well it should, for it was a rare opportunity to see and study examples of the highest art in painting. In a great many of the Blashfield drawings the themes typify the history and spirit of the Western States. Where could it be more appreciated than in California?

The public interest and appreciation was shown by the attendance, which in the two weeks was 24,250 persons, by actual count.

Thus may the exhibition committee feel that their untiring efforts have been well repaid. Much credit for the success of the exhibition and the publishing of the Year Book belongs to Mr. M. A. Vinson, manager.

This is the second of the four large exhibitions planned by the Architectural League of the Pacific Coast to be held this winter and spring. The first was held in San Francisco in October. The third will be in Seattle about the middle of April and the fourth in Portland in June.

The exhibitions in the above cities will be under the direction of the local Architectural Clubs. Mr. Vinson will act as manager of each exhibition, which is ample assurance that the third and fourth will be equally as successful as the one just closed in Los Angeles.

The Interior Decoration of Schoolhouses

By WALTER J. KENYON.

OUR graded school requires of its pupils a classroom attendance of eight thousand hours. This is a heavy tribute to levy upon the period of childhood, and it may well purchase other things for the pupil than an acquisition merely of those weapons of traffic dear to the utilitarian's heart—the so-called rudiments. It is the present purpose to discuss some of those silent influences which, without interference with the traditional purpose of the school, make for a richer childhood and a better community.

The first of these concerns the color effects of the classroom. When a competent architect plans a schoolhouse, he presumes of course that, given due time for drying out, the plaster walls will be appropriately tinted or papered, and in such tones as will give a harmonious color unity to the whole room. It is noticeable, however, that in the average American schoolhouse this ideal is seldom consummated. We rush our furnishings in, and the painters and plasterers have hardly packed up their tools before the classes are settled in an established school routine. And as for those glaring white walls, we "first endure, then pity, then embrace," finally forgetting that the plan was ever otherwise.

There are reasons, however, beyond a mere aesthetic preference, why the schoolroom walls should not be left white. It is the common testimony of physicians that the glaring whitewash aggravates nervous afflictions and injures the eyes. Many a mother diagnoses her girl's nervous headache as a case of overstudy, when it is in reality a product of five hours' exposure to the harsh, blinding glare of the schoolroom walls. And many a boy is condemned as a wickedly disposed nuisance, when he merely exhibits a nervous irritation which a proper color scheme will abate. A well-known Massachusetts physician, Dr. Myles Standish, of Boston, says:

> I have often seen children immediately and permanently recover from a persistent recurring diseased condition of the eyes when removed from a schoolroom with white walls, and sent elsewhere to school or kept at home, where the walls are tinted. The principal color of the walls should be of an even tone, so that the amount of light reflected will be the same from all parts of the surface, as waving or clouded effects are very trying to sensitive eyes. Any color may be placed in its proper position with regard to its safety for schoolroom walls by remembering the general rule with regard to the sensitiveness of the eye to the colors of the spectrum, which is, that the nearer the color is to the red end of the spectrum, the more irritating it is to the eyes; and the nearer the color is to the blue end of the spectrum, the easier it is to the eyes, with the single exception that the extreme violet rays also are irritating.
>
> From this it will be seen that red and all its derivatives should be rigidly excluded, and orange also is nearly as bad, while yellow should never be taken by preference. Greens and blues are absolutely safe colors, and it is not at all necessary that the colors should be pronounced; the depth of the color should be made dependent upon the amount of light coming in at the windows, and upon its quality, as, for instance, whether the windows have a northern or southern exposure, whether the sun's rays can come directly into the room when the sun sinks low in the heavens in the middle of a winter afternoon, and other surrounding circumstances of each individual room.
>
> The color of the ceiling of a schoolroom is fully as important as the color of the walls, particularly when there is any amount of reflected light.
>
> All I have said with regard to the color of the walls is doubly true when applied to the window shades, and this fact should always be taken into consideration in furnishing and decorating a schoolroom.

Medical science is constantly finding new and positive evidence of the pathological effects of color. And it rests with any of us to make simple experiments which will show conclusively the influence of color upon the

emotions. Look through a blue glass, and we see a sad, unhopeful prospect, in the midst of which only the utmost exertion of will-power can sustain a cheerful mood. Look through a red glass, and the reverse feeling is aroused. The outlook is one of exaggerated sunshine, which stimulates the imagination, induces a sanguine mood, and suggests action. The blue-glass craze of the seventies was an incident which foreshadowed the wide employment of color as a remedial agent.

We are thus in possession of a more or less definite knowledge of the pathology of color. We know that red is stimulating, irritating, unrestful. We know that blue is quieting, but also depressing. Since the pupil of the elementary school spends eight thousand hours in actual attendance in the classroom, it is of the highest importance to give him a color environment which will not, on the one hand, be a source of depression and melancholy, nor, on the other, an agent of excessive nervous stimulation.

We have such a color in green of the quieter sort. There is a whole gamut of greens, running from light apple down through the stone-greens, or "dried pea," to the deep, rich olives. This series is perfectly adapted to the requirements of interior tinting, either for home or for school. The distinction is often made between a north and south room, reddish buffs and terra-cottas being recommended for the former. This distinction is not vital, however, and we always approach the danger line as we move toward the red end of the spectrum. One of the most delightful school buildings it has been my good fortune to visit is tinted throughout, north and south rooms alike, in low stone-green. Another building in the same city is tinted in blue (!)—the relic of a former regime—and the effect is so depressing that one experiences a sensible feeling of relief and renewed joy on once more regaining the outer air.

A combination beyond further desire is to be had by coloring the wainscoting and woodwork a deep olive, the walls up to the molding a middle sage-green, and, above that, the walls and ceiling a lighter and neutral stone-green; this combination, of course, with the real slate board. It goes without saying that this coloring shall be "dull finish."

A striking fact is to be noted just here. The blackboard, the recipient of endless obloquy at the hands of the aesthetic, ceases to offend where the walls are rightly tinted. Indeed, the real slate "blackboard" is never black at all, but a pleasing, quiet gray that has no quarrels. It is only a glaring white wall that thrusts the blackboard into undue prominence, and thus makes it a scapegoat for a fault not its own. Speaking of blackboards, the various experiments in tinting the board have proved anything but satisfactory. The logical and satisfactory combination is a tinted wall and a board of natural slate-gray. A room thus finished is fundamentally beautiful, and is not in urgent need of any further decoration. Speaking generally, we may say that a room properly tinted is nine-tenths decorated.

I remember one school particularly, in Andover, when George E. Johnson was in charge. It had not exactly the "dim religious light," but a quality of air and color which one's home has, if he has a home. Its rooms were as cool as the aisles of the woods, and as mellow; rooms that seemed to have, in themselves, a personality, and to be sociable when empty. I used to think that not even a Jukes would play truant from such a school as that; and that no teacher, be she ever so mediocre, could quite annul the beneficence to the pupil of such a surrounding.

Regrettably, in the much-discussed topic of school decoration, this matter of wall-tinting has been rather slighted, the emphasis falling more upon pictures. This is partly due to the mad overproduction of the penny

prints. With many a teacher the problem of wall decoration seems to lie in how many penny pictures she can arrange on her white plaster wall, in friezes and borders, diamonds and circles. There is a principle in composition, very easily understood, which will serve us as a guide upon this point. It is that an aggregation of small, unrelated spots is distressful to the eye and scattering to the attention. It would be disastrous to one's equanimity to try to listen to a score of people, all shouting at once messages of unlike import. The nerve-racking effect of such a babel is precisely comparable to that produced by a motley collection of picture spots, scattering over the wall in a "promiscuous arrangement," as an old textbook writer used to say. In composing his picture, an artist is governed by certain principles of composition, the chief of which is what Ruskin calls "principality," whereby all the elements of the sketch fall into an obedient relation to one dominant feature. The minor color spots in the composition do not exist for and in themselves, but rather as organic parts of the entire sketch. In a very rough and general way, we are to conceive our wall just as the artist does his sketch, and every picture that goes upon it is to be subordinated in an arrangement having in view the appearance of the entire wall.

The first step in this direction is to gather up most of the small pictures and set them together in panels of two or three, instead of hanging them singly, each competing with all the rest. Three penny prints which are merely a vexation to the spirit when pinned up separately, become a genuine contribution to the decorative scheme of the room when they are grouped upon a single panel of mounting-board, first having their margins cut away.* And even in the grouping of these separate pieces on their mount we are yet answerable to the laws of composition. The intervals between the pictures must be less than the margins around them. Otherwise a centrifugal effect is had, and that is weak composition.

If now we have two or three panels of the sort just described, together with a larger print or two of a kind referred to later, we have ample material for our wall decoration. By all means refrain from overcrowding your walls. Remember that, while in a salon exhibit the problem is to get all the pictures up, ours is a distinctly different one. It is to regard our wall as a unit, whose hangings must only confirm its unity. And let us rid ourselves, at the outset, of the prevailing didactical idea that we are "decorating" for the purpose of instruction. Nothing can be more ruinous to the decorative scheme than to start out with this purpose uppermost. The underlying need is that the pictorial embellishment of the wall shall present a few simple and well-asserted claims upon our attention, rather than many and divergent ones. A scattered rabble of small claimants results in a dissipated attention, and this means nervous headaches and kindred things. It is a common experience to leave an art gallery with a backache or headache, or both; associated with aching feet and a general nervous depression. And this condition is not a mere physical fatigue resultant upon walking, but a nerve exhaustion following upon a sustained attention to a great number of hangings, diverse in size, shape, color, and subject, and having no mutual reference.

The subject of frames is not so easily traversed. We may say, however, that, for school purposes at least, it is safest to avoid gaudy and heavily gilded frames. The small passe partout framing is all that is

*For these mounts a material called "cover paper" is to be had at the wholesale paper houses. It costs about two cents a sheet (22 x 28), and offering every variety of delicate gray, neutral green, etc., is both cheaper and better than the regular mounting-board.

needed for prints and for most color pieces. And there is the argument for economy in its favor in that it may easily be done by the teacher herself, or by the more skillful pupils.

As to frames and mats in general, it is well to remember, with Ruskin, that the frame is "a little space of silence"—between the picture and the wall behind it. Where the wall presents one uniform tint it is not really so necessary that the frame should be neutral and "silent" as in cases where patterned wall-paper is used. But the general rule is to be held in mind that the frame is subservient to its picture and should not be too clamorous in its own right. Those ornate golden halos that are given away with pounds of tea are by all means to be avoided. The frame, in all ordinary cases (such as ours), should be exceedingly quiet and say little for itself, remembering that it is but frame, after all.

We are now confronted with the problem of the selection of our picture. First of all we perceive the danger of hanging colored chromos, or paintings. Because only cheap ones are within our means, they are tolerably certain to be bad. And, good or bad, their color schemes will more likely than not quarrel viciously with our wall tint. Thus limiting ourselves mainly to black and white, we may go a step farther and say: Throw out the half-tones, as far as we can afford. A half-tone is the style of print seen in the penny pictures and in most of the ten-cent magazines. It is just what its name implies—it is a print that has lost half of its tone, or virility of light and dark, in the process of reproduction. Examine any penny print under a hand-glass, and we perceive it to be cut up into microscopic dots. Compare it now with an etching, a photogravure, or a pen-and-ink, and this loss of tone is instantly appreciated.

Fortunately there are better things within the reach of the poorest of us. Most of the big art publishers issue, under various names, photogravure-like prints of the world's finest pictures. These are large, fine productions, generally on plates 22 by 28 inches, and they have all the depth and richness of tone of the photogravure. They are had in either black or sepia at the remarkably low price of fifty cents apiece. Such a picture, with its white border cut away and suitably matted, even in passe partout, is good hanging for the king's audience chamber. The generous size of these productions makes them especially appropriate for the schoolroom wall. One or two such pieces, well selected as to subject and reinforced by half a dozen smaller things, etchings or pen-and-ink drawings preferably, are enough for any classroom. By all means avoid overloading your wall and making the onlooker strabismic with a motley display.

But the most important consideration of all is as to the subjects we select. Let us avoid reading our own preferences too unreservedly into the children, and becoming their self-appointed proxies. The children have not that sense of historical values which is always in danger of giving their seniors a bias. We have not quite learned to distinguish between that which is imposing, from the art curator's standpoint, and that which is inherently beautiful, regardless of its niche in the lore of art. It is one thing to stock a museum of art with the conspicuous milestones of art history. It is quite another to decorate a children's room with things intrinsically beautiful—and beautiful from the child's viewpoint. Imagine, for instance, dutifully hanging "Mona Lisa" in a grade-room, simply because Leonardo did it! The pedagogical rush for Italian women, particularly madonnas, has developed into a craze, on the perfectly logical basis that the mother-and-child sentiment is appropriate to our purpose. We have merely been guilty of a little oversight in not directly perceiving

that the mature and more or less ascetic conceptions of the Renaissance Italians, catering directly to the churchly ideals of that period, are not very well calculated to provide acceptable mamma pictures for twentieth-century American babies. A sentiment of mother-love—yes, but it must be a mother-love that he can recognize. He draws a keen line between sanctity in a niche and a genuine, unposeful motherhood. And so I say again, if our purpose is decorative rather than didactic, let us gather intrinsic, and, if necessary, unsigned, beauty, rather than the melange of the art museum.

Then again, the masters, who spoke first of all in color, can not be represented in the remotest degree by printer's ink—particularly in the half-tone; and all this bowing and scraping before "penny prints of the masters" is about as near the real spirit of art as idol-worship is to genuine religion. Supervisors of art and students of any sort who address themselves to the educational problem are fearfully apt to mix up their academic acquirements with their native appreciation until they mistake one for the other, and so disqualify themselves for the work in hand. A while ago an inquiry was sent to several dozen artists, teachers, presidents of civic clubs, etc.—men and women who presumably had the matter most at heart—as to what pictures they would recommend for school decoration. The answers, invariably cordial and enthusiastic, almost with one voice placed the "Sistine Madonna" at the head of the list! No stronger evidence could be presented of the incubus of hopelessly academic bias under which the subject rests. "The best in art is none too good for the children," wrote Dr. Klemm. While everybody must agree heartily with this sentiment, what a curious miscarriage of ideas it is to set up the subjective and subtle as the one antithesis to the mediocre! Mr. Vickery, of San Francisco, sounded a hopeful note in declaring that "a good poster is infinitely better than a mediocre engraving." Ellen Gates Starr said: "Almost anything of Millet's is good;" and then, endorsing the mother-and-child sentiment for primary rooms, she shortly mentioned Millet's "First Step," where others had chosen the "Sistine Madonna."

If we must have madonnas, why may we not take those three or four in which the mothers are in love with their babies and the babies themselves are kissable? Name over Feruzzi, Murillo (that one in the Pitti Gallery), Frosch, and, above them all, Courtois, and, I take it, we have about finished the list. And yet, of these incomparable painters of mother and child, three out of the four are unheard of in the levels where they would win their deserved appreciation if introduced. Add St. Anthony, with his strong natural appeal to adults and children alike, and the rest of our wall we need for less exalted subjects.

If we can once bolster up our common-sense with enough moral courage to leave off this indiscriminate goose-marching after madonnas, even the penny prints, which have come in for such ill-usage in this writing, will have their uses. Just think of Millet, Breton, and Dupré, with their fine realities; Adan and Meyer von Bremen, with their rollicking German sunshine, a ten minutes' bath in which is as good as a day in the country; Sir John Millais and Sir Joshua Reynolds with their galaxy of matchless little maids; and finally Jacques with his sheep, and Barber, Carter, and Adam with their household pets. Think of this diverse and all-satisfying company being put out of countenance and being thrust against the wall, so to speak, by an undifferentiated group of pallid and poseful madonnas, scarce a quartet of whom could either love or be loved, by the most amiable

stretch of the imagination! Rather let us be at once exoteric and generous, and give the madonnas over to the sophisticated and tempered academician, to have and to hold for his very own.

Summarizing, let us leave out the mawkish pictures, on the one hand, and the too subtly religious ones, on the other, and make our choice among the sane, joyous, lovable things that are so readily to be had. The principles which nowadays guide us in the selection of children's literature have only to be applied in this question of children's art.

In every school room there are jogs in the wall, narrow intervals between windows, etc., which are not adapted for the hanging of pictures, but are just right for the placing of plaster casts. Since these, even of the Della Robbia order (which have always been chosen with the madonnas), do not carry a particularly emotional significance, as do pictures, we shall have to base our selection upon somewhat different values. Their first utility is purely decorative, having in view the general scheme of the room: so that the shape, size, and general appearance of the piece have perhaps as much to do with our selection as the subject itself. The beautiful "Flying Mercury," for instance, is altogether too fragile to introduce into any school house. And any statuary for the classroom, however robust in its lines, should invariably be placed above the six-foot level. Busts of authors and statesmen are as suitable as any others, not with the idea that many children will exhibit an intelligent affection for them, but that they will pleasantly finish the appointments and the color scheme of the room. To do this these casts must, of course, have the ivory finish, which costs no more. Nothing (save a blue wall) is quite so persistently ugly as a plain plaster cast. Even the inevitable dust of seasons does not soften its harsh unfriendliness; and, on the other hand, there are few color spots in the room more grateful to the eye than the embalmed sunshine of a bit of ivory-finished statuary.

Vying in importance with the pictures in the schoolroom are the plants. A sage-green room with a table full of growing things by the window is an abode of joy, pictures left out of the question. And the effect is greatly enhanced if there be, beside the plants, or embowered among them, a little aquarium with a goldfish dawdling in it.

A clever device for the purpose is in use in Stockton. The potted plants are set upon an ordinary cheap table, except that the top is zinc-lined and sunk in for an inch; or, in other words, the edges of the top are raised that inch, making a shallow, zinc-lined trough. The flowers can thus be watered without any danger of leakage, or of unsightly, warped table-tops.

Draperies in the schoolroom—except window curtains, periodically washed—are universally condemned by all who have given the matter thought.

There is some diversity of opinion concerning animals in the schoolroom. Much is urged against caged life before the children. A correspondent covers the question thus: "I object to having animals confined for entertainment of young or old, at home or at school. But this allows us some latitude, inasmuch as we may have much animal life about which is not, in a strict sense, confined. It requires an overwrought imagination to commiserate a well-tended canary, for example." A letter on the subject refers pleasantly to "a tame, comfortable kind of animal, or goldfish in a globe," in which is a water plant growing." I knew one class in which a dog or two were in fairly good attendance. They were orderly in deportment, and gave silent and continuous approbation to the whole programme. True enough, the teacher, in her frequent rounds, had to step over an occasional barrier, but I do not recall any schoolroom, before or since, where the spirit was more homelike, wholesome, and perfectly conducive to study.

The Second-Class Rate and the Postal Deficit

IN HIS annual message, President Taft called attention to the Post Office Department deficit of $17,500,000 and ascribed it to the alleged fact that the cost of carrying second-class mail, consisting of newspapers, magazines and miscellaneous periodicals, is $63,000,000 more than the receipts from that source. The rate is one cent a pound—the President says that the cost of transmission is 9 cents a pound.

The President has not been wisely, nor fully, informed in relation to this matter of the responsibility of the second-class rate for the alleged deficit, nor as to the true responsibility of the magazines and periodicals; while it is evident that the wisdom of fostering rather than destroying the greatest agency in the world for the propagation of business has not been impressed upon his mind.

It is time for the magazines, the trade papers, the periodicals—yes, and the newspapers—to insist that the service they are doing the United States, through their business-building advertising, shall be recognized, and shall be considered as one of the reasons for the low rate of postage they have been accorded, and one of the chief foundation stones of a policy, clearly stated and vigorously maintained, working for the retention of the same rate.

Compared with the scale of expenditure in other directions for the expansion and regulation of the business of American business, the pitiful matter of the little bookkeeping deficit in the postal revenues, which it is proposed to load upon the publishers of the periodicals and magazines, looks too small to be noticed by any man who has the interest of the business of the country truly at heart.

It is not only a poor rule that will not work both ways, but it is no rule at all. What the President's proposition amounts to, therefore, when it is resolved to its obviously true meaning, is that the magazines and periodicals shall be assessed an increase of postal rate sufficient to overcome a deficit apparent in the postal revenues, arising from the neglect to charge all of the service rendered by the Post Office Department to the recipients of that service.

There is, however, a more consequential argument against increasing the second-class rate of postage than any that has as yet been mentioned. It is the part which the magazines and periodicals, and the newspapers, play in the growth and development of the business of the country, and involves a consideration of the great question of advertising as one of the greatest forces now working for the development of the United States and the advance of civilization, and as one of the obvious though unacknowledged concerns of government.

From whatever viewpoint we look upon the work of the government we find that it is always working for business—for the extension of American business, for the regulation of business, for the protection of business. All phases of business are made the great concern of government, save the greatest phase of all—the creation of new business. That is the office of advertising. And the most effective advertising that is done is that which is done by the trade papers, the magazines, and the newspapers.

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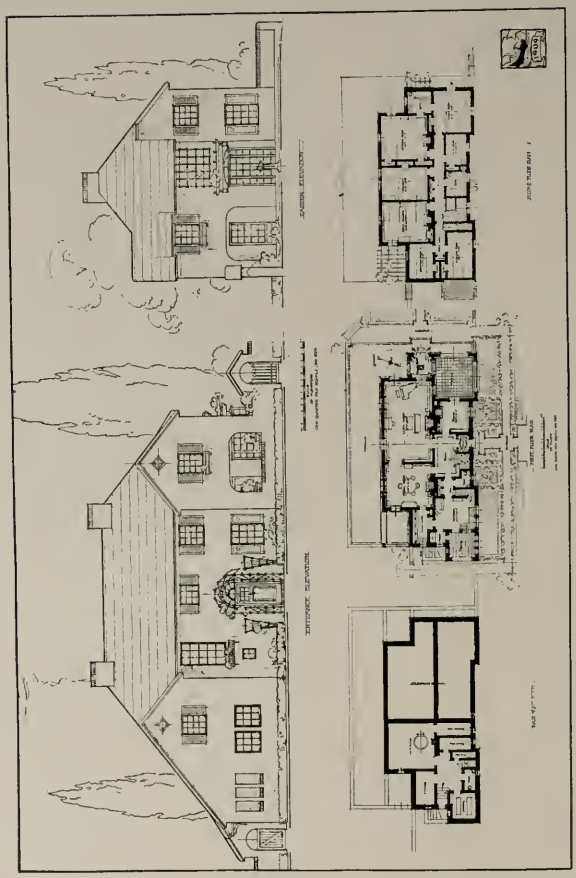
* *

The Settlement

Suitor: "What will your father settle on the man who marries you?"
The Girl: "All the rest of the family, I suppose."—St. Louis Times.



Plan of Fireproof Residence of Terra Cotta Hollow Tiles

A House Built of Hollow Tiles

A COMPETITION held recently by The Brickbuilder brought out a number of clever designs, the best one of which is shown on the opposite page. The competition was for a house to be built of terra cotta hollow tiles, and to be covered upon the exterior by either stucco or brick. The problem was a thoroughly practical and modern one with simple direct requirements, clearly stated and of such a nature as to be easily met. It was such a problem as today engages the attention of many architects and owners.

Terra cotta block architecture demands absolute simplicity of treatment and does not lend itself readily to vagaries in design, either as to mass or detail. The material limits expression to a greater extent than almost any other material in use today, with the possible exception of concrete.

The design which won first prize is a charming one, beautifully planned and proportioned in its parts and finely expressed as to its elevation. The author had a clear conception of the mass of his house as a whole, and of the material he was to use in constructing it. Simple, direct, and clean cut, the design answered perfectly the basis of criticism established by the programme as to its fitness, adaptability, and relative beauty. In the elements of the plan the rooms were finely arranged; the chimneys as an important part of the design were most effectively placed, both as to plan and elevation; the roof, while simple, was sufficiently cut up to give gables on the exterior, where they are of great aid to a design.

* * *

Metal Lath for Outside Plastering

The controversy that has arisen among builders and contractors over the merits and demerits of metal lath as a holding device for exterior cement work has provoked a defense of the metal product from Oscar Bradford, a prominent Chicago contractor. Mr. Bradford maintains that metal lath is superior in many ways to the old-fashioned kind. His defense is pronounced particularly interesting by contractors in view of the present forest conservation agitation and the efforts to secure as far as possible building materials that will give the same service as forest products and in so doing, help preserve the remaining forests of the country. Says Mr. Bradford:

"If metal lath corrodes it is solely because of the manner of its use, just as a steel frame of a skyscraper would rust if improperly protected.

"If wood lath is used and subjected to moist conditions, it is plain that it would not rot as quickly as metal would rust, especially as the lath now on the market is usually made of the sap and bark of the log.

"The fact is that aside from questions of longevity, wood lath has such a defective 'key' for mortar that it is a practical impossibility for any length of time to keep plaster on it.

"If this is an evident fact in almost every house on inside work, how much more is such a defect likely to appear on more exposed outside work.

"Metal lath for external use should be of the thickness of 24-gauge and painted before shipment. It should have a mesh not larger than ⅜ by ⅝ of an inch, as this enables the mortar to pass through and completely imbed the lath front and rear.

"A large mesh lath causes a waste of mortar, which drops behind.

"Exhaustive experiments have shown that cement is one of the best protectors of metal from corrosion and thousands of steel reinforced concrete buildings are constructed annually on this assurance.

"The greatest advantage of covering an old frame house with cement is the opportunity to secure an air space which makes it much warmer in winter with less fuel and cooler in summer."

FIRST FLOOR PLAN

ENTRANCE FLOOR PLAN

House for Bishop Nichols, Episcopal Diocese, San Francisco

Bliss & Faville, Architects

Ruminations and Cogitations

By F. W. FITZPATRICK.

WE OFTEN growl and complain about the dismal monotony of the endless rows of ready-made houses in our cities, houses built wholesale by speculative builders and sold upon the easy-payment plan. These houses of awful similarity are simply spoiling the looks of some of our best streets. The suggestion has been made, and it is worth considering, that, since these builders will not pay for different designs and no one can force them to, the several chapters of the A. I. A. give them designs for a couple of different blocks, the whole row, from street to street or street to alley, to be designed as a unit, with some continuity to it, lines and character. Splendid effects can be obtained at very slight, if any, increased cost. The whole block then becomes a unit of design instead of each house. Two or three such designs would relieve the monotony and be of vast benefit to our cities. It would be public spirited on our part to do something of the kind even if we have to give the designs to these fellows who are surely and rapidly making our cities hideous.

* * *

Much good work was accomplished at the recent and Forty-third Convention of the A. I. A. The Canons of Ethics and Rules of Practice adopted were fine and look real good—on paper, but how many of them, oh Lord, how many, are being honored more in the breach than in the performance? Take that little rule, for instance, saying that an architect should not enter a competition unless there be an architectural jury, prizes or fees, and a whole lot of other things. Here is a competition, out in the Coast District, in which not one of those rules has been complied with and into which twenty-seven practitioners have asked to be and have been invited to join and have signified their intention of competing. Plus which five more are clamoring to get in. And all these men are not cubs just beginning to practice, but fellows in good standing, some of whom undoubtedly have descanted loudly and fluently in behalf of restrictions and competitions and who voted conspicuously for these very rules. More and worse still, in the eyes of the A. I. A. as a body, it has been intimated to these gentlemen that the charge for services would cut some figure, a competition in price in other words. And I am betting fifteen cents with myself that at least twenty of those gentlemen will offer to get down to three and four per cent instead of the six that has been decreed by the A. I. A. It's a big job and few men are going to let many rules and ethics stand in their way.

And how about Canon Number 7, and Number 11, and Number 6, and the whole blooming twelve of them, for that matter? Let each man retire into the privacy of his praying-closet and there examine his conscience and see if he has not done some of those things which he ought not to have done, or at least that the Canons say he ought not to have done, and to see if he is not now doing, or intending to do, or wishing his mightiest that he could do things not exactly according to architectural Hoyle. Let us commune with our inner selves!

* * *

The above does not necessarily suggest graft or any real wrong-doing, but I just happened to drift from one subject to the other. We have had so much scandal in late years connected with big public buildings, and we read so much every day about civic wrong-doing, manipulation of contracts and stuff of that kind, that it occurs to me that vast sums could be saved the public if our legislators would only set aside certain sums espe-

cially for the grafters without the latter having to go through the farce of contracts and things of that kind. As matters are now, the State is often forced into contracts for more or less useless buildings or alleged public "improvements," or in the purchase of unnecessary plants and supplies, merely that Mr. So-and-So's friend, who is a contractor, can make a reasonable profit, part of which, of course, will find its way through devious channels ultimately into Mr. So-and-So's pocket. I know of cases where a State or municipality has been flimflammed into the expenditure of a million dollars utterly uselessly, just so that some one or other could make five thousand out of it. Hence the argument that it would be real economy to give the man his desired five thousand and save the people the other nine hundred and ninety-five thousand dollars. Just fix it so that if any evil-minded cuss wants to boodle or graft all he need do is to say so and how much he expects to make out of it. Let the authorities pay him that much and call it square. I expect immediate legislation in this direction and it will be so nice and handy to have the boodlers so declare themselves. Of course, there should likewise be legislation looking to the proper care and protection of the aforesaid gentlemen who so honestly declare their intentions.

* * *

A visit to the convention room of the Willard while the Architects' Institute was in session was refreshing and enlightening in many ways. Not the least of which was the evidence given of the progress that can be made by a lot of individually bright men if they can only work together and for some common end. A few years ago the profession counted among its members probably just as able and talented men as we have today, but you never heard of them save as individuals. An architect's business was to design buildings and do what he was told to do by his clients, and that settled it. Now the Association is taking an active interest in affairs generally and is forcing its members into their rightful places not only among the learned professions, but as important factors and very important factors, in our national progress.

One of its good works is being done right here in Washington. Soon after the suggestion was made that the l'Enfant plan of Washington be revived and lived up to, the American Institute of Architects actively took hold of the scheme and has stuck to it so steadfastly, urging and securing the appointment of a Park Commission and pinning Executive and Congressional attention to the city's needs so thoroughly, that the salvation of the Mall is assured, and we have now a comprehensive and fixed plan of public improvements that is being lived up to. When money becomes available for public buildings those buildings are located and designed to fit into this general scheme and to become part of a useful and beautiful whole, instead of being planted haphazard by Congressional favor or to suit the especial desires of some real estate clique, as used to be the order of the day.

Would to Heaven that some such plan of action could be enforced in our private work! Our speculative builders seem to be bent upon spoiling our city as earnestly as the authorities and the architects are endeavoring to beautify it with public buildings. Nevertheless and notwithstanding, here's to the American Institute of Architects and may its shadow never grow less!

* * *

An English sage sees in the automobile grave possibilities in that direction. Says this wise man: "A perfectly honest, well-meaning, law-abiding

citizen purchases a car. It is a high-speed machine, but he intends using it sanely, but some time or other the speed lust gets hold of him. He tries it once or twice. Policemen and constables warn him and chase him. The game becomes exhilarating. He begins to think that speed laws are silly and he breaks them ruthlessly; people ought to get out of his way; why should he be concerned for their safety. It is a habit of mind that grows. He takes it with him into his counting-room. His methods become ruthless there, too. The speed laws mean nothing to him, and why should he bother with the other laws? They, too, may be evaded. Or the insignificant fine paid and he be none the worse for it. In the course of time you will find implanted in that man all the necessaries for the making of a first-class scoundrel, a high-handed Napoleon of finance, a looter of banks. Nurtured and made by the automobile." The builder or property owner possessed of a machine is very apt to feel that building restrictions are as silly and unnecessary as are the speed regulations and he proceeds to infract both. The automobile is blamable for a whole lot of tribulations and I can trace its influence in several recent and very nasty building mix-ups.

* * *

And the Russian engineer who had this dream may not be so far off after all. To him it seems that in the course of time great armies and navies will be eliminated as useless. A few engineers will be able to direct such terrible mechanical means of destruction that whole cities may be destroyed by the touching of a button. But this would mean the wiping out of property as well as of human lives. The financial interests of different nations are so interlaced, each one having so much invested in every other country that such wholesale destruction wouldn't be tolerated. As long as war simply means the destruction of men, armies, and that to carry on this destruction there must needs be fat contracts given out for food and clothing, and war loans made, other nations than the combatants may offer friendly interference, but are not particularly or really interested in seeing the thing cease. But under these new conditions, when it is property and interests that are at stake, financial interests of all nations, then there will quickly be made combinations so powerful as to forbid such destruction. So that perhaps, it is only by pushing this war thing to the very limit, adopting all the latest and newest devices and awe-inspiring weapons that we may ultimately acquire real and universal peace, the possibilities of a fight becoming so terrible that every one not directly in it will bend his every energy toward preventing it.

* * *

If the State has the right to come upon your premises and examine your cow, and if the State's expert has reasons to suspect that that cow is tainted with some disease, it is forthwith condemned to capital punishment, then why, by the same token, can't the State order your tenants out of your building because its construction is dangerous—it may burn down any minute and those people's lives are in constant jeopardy?

That may sound a bit drastic, but we certainly have been slack in our building requirements, and such occurrences as the loss of eighteen lives in a recent London fire and the knowledge that as many as six thousand lives have been sacrificed in fires in this country in a year's time should make us stop and think once in a while. The suggestion made by a Washington building expert is particularly timely. Our own great stores are crowded to their limits these days. Think of what a fire would mean in one of them! One thing that is more than ordinarily exasperating in this connection is the glibness with which people use the term "fireproof." A

tin roof on an old firetrap is enough to justify some people in calling it "fireproof." It is this rascality of some and the ignorance of others that make this expert insist that:

"It is imperative that our authorities should demand good, incombustible construction. Left to their own volition it would be years before the people would build that way. It has to be made compulsory. The community must legislate for its safety and against the selfish or ignorant interests of the individual. But it may help the individual nevertheless by making it directly advantageous to him to build properly. Supposing even that the regulations do not exact fireproof construction everywhere, taxes should be so arranged that a maximum rate should be assessed against inferior, highly combustible buildings. It is for their protection that the city has to maintain expensive fire departments and fire-fighting media; were it not for those buildings such expense would be unnecessary. It is nothing but right, consequently, that the owners of those buildings should pay their full pro rata of that charge. The rate upon first-class fire-proof construction should be the very minimum because those buildings require the least of that protection and their owners should not be made to pay as much for it as are others. This would be but equitable in the first place and in the second place would encourage men to replace their combustible contraptions with better buildings. Next and immediately necessary the authorities should conspicuously label every building of public or semi-public nature, just as to its class of construction, 'fireproof,' 'ordinary,' 'dangerous.' As it is now, the term 'fireproof' is cruelly abused. It is applied where there is not the slightest foundation for its use and is made the means of obtaining tenants and occupants under false pretenses. A man with 'dangerous' affixed to his building would have difficulty in renting it and that would be a powerful incentive to him to at least make the building better if he did not absolutely eliminate it and build correctly. Then we should have the same municipal regulations that they have in most European cities relating to 'neighboring liability.' Here we have a selfish way of taking care of ourselves and letting the other man shift. There they make you responsible for any damage to your neighbors' premises or property that may result from a fire on your premises caused by your or your agents' negligence or carelessness. It makes people wondrously careful in handling their ashes, waste paper, etc. These neighboring damages are always collectible at law in Europe and the regulation is one of the most effective of fire-preventive measures."

* * *

New Code of Ethics of the American Institute

BESIDES voting to hold its next convention in California, the American Institute of Architects at its meeting in Washington in December elected Professor John Galen Howard of the University of California a director, and Octavius Morgan of Los Angeles was named a fellow of the Institute. A feature of the session was the memorial exercises held in the Corcoran Art Gallery in commemoration of the late Charles Follen McKim, in the presence of a distingnished company, including President Taft, who, with Elihu Root and Joseph H. Choate, eulogized the famous architect, uniting in declaring that his work in restoring the White House and laying the foundations for the present park system of the city put Washington, as well as the whole country, under a debt to him which will be everlasting.

A gold medal awarded to Mr. McKim in 1908 by the Institute, which was to have been presented to him last year, was presented, in his name, to William R. Mead, President Cass Gilbert making the presentation.

President Taft, in the course of his remarks, in which he referred to the many occasions in which he came in contact with the late architect when Secretary of War, called attention to the present White House and the other creations which grew out of his talent as denoting varied gifts and wonderful persistency of the man.

The president of the Institute, Mr. Cass Gilbert, of New York, occupied the chair at the opening session on Tuesday, and a short address of welcome was made by Commissioner of the District Judson.

In his address President Gilbert reviewed the work of the past year, and announced that after a struggle the financial deficit has been wiped out and the Institute put fairly on its feet. To raise additional funds he recommended that the initiation fee and the dues be raised. He referred to the Council of Fine Arts created during the Roosevelt administration, and which had been legislated out of existence by Congress, but which, during its brief career, had done good work. He recommended the establishment of a Department of Public Works to take its place. Such a department would, he said, exert a powerful influence in raising the standard of architecture of public buildings and the beautifying of cities and parks.

Mr. Gilbert characterized contracting corporations which acted as promoters, owner contractors, financiers, and even as architects, as a menace to architectural and building interests, and it was time, he said, that abuses arising out of this method should stop. The solution consisted, he said, in simply cutting out the middle man and dealing direct with the minor contractors.

The report of the Board of Governors showed that there are 1,026 members of the Institute, the number including 303 fellows, 585 associates, 61 honorary and 77 corresponding members. Attention was drawn in the report to the International Convention of Architects that will meet at Rome in the autumn of 1911, and to the Newland bill creating a government bureau of fine arts.

The report of the treasurer and auditing committee, read by Secretary Glenn Brown, showed the Institute to be in good financial condition.

The delegates went into committee of the whole, with D. Knickerbacker Boyd, of Philadelphia, as chairman, for consideration of professional ethics. The following tenets were held, it being deemed unprofessional for an architect:

To engage directly or indirectly in any of the building trades.

To guarantee an estimate or contract by bond or otherwise.

To accept any commission or substantial service from a contractor or from any interested party other than the owner.

To take part in any competition the terms of which are not in harmony with the principles approved by the Institute.

To attempt in any way, except as a duly authorized competitor, to secure work for which a competition is in progress.

To attempt to influence, either directly or indirectly, the award of a competition in which he is a competitor.

To undertake a commission while the just claim of another architect who has previously undertaken it, remains unsatisfied, or until such claim has been referred to arbitration or issue has been joined at law.

To compete knowingly with a fellow architect for employment on the basis of professional charges.

WILLIAM MOOSER, ARCHITECT
President San Francisco Chapter, American Institute of Architects

For the Good of Architecture

By WILLIAM MOOSER, Architect.

WHAT of our hopes are destined to be accomplished during the coming year to better the conditions of the profession of architecture through the medium of the San Francisco Chapter of the American Institute of Architects?

In the first place it is the duty of all practicing architects within the limits of Northern California to become members of the chapter, and also the Institute—for, much that has been accomplished by these bodies, there is still a great deal to be done, especially by our chapter, and we need and earnestly solicit all architects to join with us in this great work, for there is "strength in numbers and unity."

The San Francisco Chapter as now constituted, has some one hundred and three members and holds meetings once a month, preceded by a dinner, at which time the attendance is second to no other chapter in the United States.

Under the presidency of Mr. Albert Pissis the chapter has advanced very materially during the last few years, and while perhaps, the work so far accomplished has not been as much as might have been desired, we have, however, become a united body, interested in all work for the good of " architecture," and that this work is beginning to manifest itself in one form or another is easily traceable from various sources.

First, the chapter has been notified officially by various boards and commissioners having in charge the carrying on of competitions for buildings, and the committee having such matters in charge has been of considerable assistance in giving advice and submitting general forms for the ghidance of these boards and commissioners.

As competitions at best have always been a source of a great deal of controversy and fault finding, it is of the utmost importance for us to try and find some way of making them less so.

In the matter of competitions for public buildings in all cities and towns outside of those having charters, there is an old State law, "framed in 1872," which still, in the opinion of some, holds good, and which in its entirety is obsolete. It will be the duty of the chapter to prepare a proper bill to be introduced at the next Legislature to regulate such competitions, or to abolish them, as may be desired. Our chapter will work to this end in harmony with the Southern California chapter, so as to be united before the Legislature.

The same may be said in regard to the "Tenement House Law," committees from both chapters having been appointed and much good will be expected of them.

I would suggest, and do now notify all architects, that a meeting will be held in Los Angeles in April to take up these two matters and any others wherein both chapters are interested, and any suggestions on these subjects from architects in general, whether chapter members or not, will be appreciated, if sent in to the secretary.

These are only a few of the matters now taking up the attention of our members, and it would seem that all architects should be enough interested in the work to join the chapter, and aid it in every way possible in furthering the interests of the profession.

I am glad of the opportunity given by the Architect and Engineer, to reach all architects throughout the State, that they may be enlightened as to what is being done by the chapters, to aid and assist in striving for better conditions surrounding the profession, and we are thankful to have a journal through which such news can be circulated.

A Retaining Wall and Mausoleum — *Prize Winning Design by L. C. Rosenberg, Portland, Oregon*

ARCHITECTURAL LEAGUE
OF THE
PACIFIC COAST (Official)

OFFICERS FOR 1910.

President,
ALFRED F. ROSENHEIM,
Los Angeles, Cal.

Vice-President,
E. F. LAWRENCE,
Portland, Ore.

Secretary,
JOHN KREMPEL,
Los Angeles, Cal.

Treasurer,
W. R. B. WILCOX,
Seattle, Wash.

NEXT CONVENTION—LOS ANGELES, CAL.
NEXT EXHIBITION—SEATTLE, WASH.

RESULTS OF COMPETITION WORK FOR DECEMBER-JANUARY

Student Work.—All mentions are credited by the Society of Beaux Arts Architects, New York. First mentions and medals must be confirmed by the New York Society before being credited by them.

Order Problem: "A Retaining Wall and Mausoleum."

Name.	Award.	Atelier.	City
L. C. Rosenberg	First Mention	Lawrence	Portland
H. M. Jackson	Mention	Myers	Seattle
C. K. Greene	Mention	Lawrence	Portland
A. T. Curtiss	Mention	Lawrence	Portland
H. P. Bergen	Mention	Lawrence	Portland

Plan Problem: "A Swimming Pool and Baths."

P. D. Richardson	Mention	Myers	Seattle
E. P. Williams	Mention	Myers	Seattle
Wm. B. Macomber	Mention	Myers	Seattle
Louis Suarz	Mention	Myers	Seattle

Results of Recent Competitions

Messrs. MacDonald & Applegarth, San Francisco architects, recently have been unsuccessful in two important competitions. At San Jose the plans of Architect William Bender were accepted for a reinforced concrete hotel, in preference to the sketches submitted by the San Francisco architects, while at Elko, Nev., recently, Architect William H. Weeks of San Francisco and Watsonville, had his design for a $100,000 court house accepted, although MacDonald & Applegarth had a representative on the ground.

Shattuck Hotel of Reinforced Concrete, Berkeley, California
Concrete Work by Esterly Construction Company. Ben G. McDougall, Architect

Possibilities of Concrete for Public Park Decoration

Comparative Cost of Constructing Two Identical Reinforced Concrete Buildings*

By MASON D. PRATT.

IN 1904 the Central Pennsylvania Traction Company of Harrisburg, Pa., built a car barn and a repair shop of reinforced concrete, probably the first buildings in this country built entirely of this material for this purpose. The buildings are one story in height and were constructed in the usual manner by erecting wooden forms and casting all concrete work in place. The same company has just completed a second barn adjacent to the one above described of the same dimensions as the first barn—viz.: 75 feet wide by 360 feet long. The last barn is also of reinforced concrete, but owing to conditions which seemed favorable for the purpose, an entirely different mode of construction was followed. All of the members for that portion of the building above the foundation and floors, including columns, beams, wall and roof slabs, were separately molded on the ground and afterwards erected by means of a traveling stiff-leg derrick. This method of construction proved economical and owing to the close similarity of the two buildings in size and general design it is possible to make an accurate comparison of the costs. In describing the two buildings, Barn A refers to the original building and Barn B the last one erected.

Barn A was built on ground which was from 2 to 10 feet below the floor level. The column footings were placed on solid ground 6 to 12 inches below the sod and carried up within 1 foot of floor level, the ground being filled in after the building was under roof. In general plan the building had three rows of non-reinforced hexagonal columns spaced 15 feet centers longitudinally and 37 feet centers transversely. The roof consisted of transverse beams, resting on the columns, longitudinal purlins and a 3-inch slab cast in place, the columns being connected longitudinally with beams 6 inches thick and 2 feet deep. After the forms were removed from this skeleton the three longitudinal walls were filled in place. Provision was made for future extension laterally by casting brackets in the columns to support roof girders for an adjacent bay. The barn also had a wing 16 feet wide and 90 feet long, containing barn foreman's office, lockers and lavatory for the use of motormen, conductors and barn men.

Concrete for this building was mixed in a rotary batch mixer, into which the aggregate was dumped directly from wheelbarrows, and the concrete distributed from the mixer to the job in wheelbarrows by means of runs and an elevator operated by a power hoist.

Barn B was built entirely independent from Barn A, the first wall being placed 37 feet beyond the wall of Barn A, thus permitting the increase of the plant by one additional bay in the future by simply adding a roof between the two buildings. Column spacing was made the same as Barn A, but the columns were square. In order to get roof slabs of a size which could be conveniently handled, the roof beams were spaced 10 feet centers and alternated in the two bays. Thus on the outer walls a roof beam came at every other column while on the center wall each column carried a beam and a longitudinal beam between columns supported the ends of two roof beams. The roof proper consisted of slabs, 3½ inches thick, 10 feet long and 6 feet and 7 feet wide, which were laid directly on the roof beams. Two slabs at the center of every alternate 10 feet bay were omitted to allow placing skylights. The walls were 6 inches thick, as in the case of Barn A, but were made up of slabs of various sizes. These slabs were all tongued

*One building is of separately molded members while the other is of members molded in place

and grooved, as were also the columns. Three-eighths of an inch was allowed for all joints, the horizontal joints being mortared as the work was laid up and the vertical joints filled and pointed after everything was in place. A small percentage of reinforcement was placed in all slabs as an insurance against breakage in handling.

The concrete for this building was mixed in the same mixer used on Barn A, located at a central point, the materials being moved in wheelbarrows as before.

Barn A had about 290 feet of open pits under each track, 60 feet of the front end of each bay being paved with granolithic floor and used as space for washing cars. Barn B had the same arrangement in one bay, the other bay, which was intended for storage purposes only, had granolithic floor from end to end. The ground on which Barn B was built had been filled in with various materials, mostly cinder from a nearby steel plant, and excavations had to be made for all foundations. In the figures given below all labor for excavation in both buildings is omitted. In Barn B each column had a separate footing as in Barn A, which, however, was carried to a point 15 inches above floor level, and provided with a pocket to receive the column. A layer of sand was put in each pocket to give the column good bearing and to adjust height. A beam 12 inches wide and 2 feet deep connected these footings, being cast at the same time with the footings.

The tracks were laid in the storage bay and the granolithic floor cast in place at the time of starting excavations for the foundations, and as soon as the floor was in place the casting of beams, columns and slabs began. The beams and columns were nested by casting the alternate pieces a suitable distance apart, and after removing the forms these became the forms for the intermediate pieces. The slabs were cast in piles, the ends being offset to enable rapid handling. The pieces were separated by means of 40-pound waxed manila paper. No difficulty whatever was experienced during the erection in separating. In some instances soap was used, but the results were not as satisfactory and the cost was higher than with the paper. The surface of the pieces formed by paper separation showed a close, smooth, dull surface, except for the wrinkles formed by the paper, which was not heavy enough to prevent wrinkling. The paper was also responsible for other defects in the surface finish, owing to the mortar running in between joints where the paper overlapped and forming thin slivers. The paper was easily removed with water from a 1-inch hose, with nozzle ¼ inch. The top surfaces of all pieces, of course, were troweled. This gave a rather variegated wall surface to the structure, but a coat of cement wash using a thin mixture of about equal parts of cement and limestone dust applied with whitewash brushes produced a fairly uniform appearance. This method of construction involved the use of slightly more reinforcing steel and a larger yardage of concrete, but the saving in forms, lumber and carpenter work was more than sufficient to pay for this difference and the additional cost of derrick and erection labor.

The number of loose pieces required was 1,400. These were completely erected in 33 working days, with a loss of only three slabs from breakage.

The derrick used was a standard stiff-leg with 60-foot boom and 38-foot mast, mounted on a truck so that it could be moved around the work. Power was furnished by a regular street railway motor through a gear bolted to the flywheel on the driving shaft of a two-drum hoist, the motor being equipped with standard street railway controller and suitable resistance coils. A traction company motorman operated the hoist and a rigger crew placed the material. The heaviest pieces handled were the roof

beams, which weighed 7½ to 8 tons. A number of special devices were used to handle the various pieces. For the heavy beams a loop was formed at the quarter points by bending a reinforcing rod, bringing it flush with the top of the beam and scooping out a portion of the concrete while green, and a special hook used to engage this loop. These hooks entered the

Table I.—Showing Cost of Concrete in Separately Molded Concrete Car Barn.

Barn B.

	Total.	Per cu. yd.
Foundations and Floors, 710 cu. yds.:		
Materials:		
Stone at $1.25 cu. yd.	$ 856.00	$1.20
Sand at $1.30 cu. yd.	432.00	.61
Cement at $1.15 bbl.	1,082.50	1.53
Steel	120.00	.17
Lumber	633.00	.89
Tools	100.00	.14
	$3,223.50	$4.54
Labor:		
Placing reinforcement	$ 19.00	$0.03
Forms	771.00	1.09
Concreting	1,015.00	1.43
	$1,805.00	$2.55
Total materials and labor	$5,028.50	$7.09
Building above foundations, 948 cu. yds.:		
Material:		
Stone at $1.28 cu. yd.	$1,085.00	$1.16
Sand at $1.30 cu. yd.	546.00	.58
Cement at $1.15 bbl.	1,735.00	1.86
Steel	1,755.00	1.87
Tools	140.00	.24
Lumber	220.00	.15
	$5,481.00	$5.86
Labor:		
Forms	$ 818.00	$0.87
Bending and placing reinforcement	360.00	.39
Concreting	1,152.00	1.23
Erection	1,776.00	1.89
Painting and cement wash	617.00	.66
	$4,723.00	$5.04
Total labor and materials	$10,204.00	$10.90
Totals, 1,648 cu. yds.	$15,232.50	$9.245
Area covered by building, 360 X 75 ft. = 27,000 sq. ft.		
Cost of foundations and floors	18.5 cts. per sq. ft.	
Cost of building	38.0 cts. per sq. ft.	
Total	56.5 cts. per sq. ft.	

Table II.—Comparison of Cost Between Car Barns, Separately Molded and Cast in Place.

(Average including Foundations and Superstructure.)

	——Per cu. yd.——	
	Barn A.	Barn B. (Separately
Materials:	(Cast in place.)	molded pieces.)
Stone, sand and cement	$3.480	$3.480
Steel reinforcement	.915	1.140
Lumber	1.335	.480
Paper	...	.040
Tools, wheelbarows, etc	.145	.145
	$5.875	$5.285
Labor:		
Carpenters	$3.250	$0.965
Bending and placing steel	.095	.230
Concreting	2.210	1.685
Erection	...	1.080
	$5.555	$3.960
Total cost per cu. yd	$11.430	$9.245
	9.245	
Difference in favor of Barn B	$2.185	

slotted ends of a steel spreader. The rig was thus adjustable for variable spacing of the loops and for balancing. The slabs were handled by means of slings, holes being formed in the slabs with a short section of ¾-inch gas pipe for receiving bolts. In setting up the side walls, these holes were used to fasten 3 x 4-inch sticks on each side of the three wall slabs of each bay, thus keeping them in line, and by means of props, in a vertical position until erection had proceeded far enough to remove them. Fig. 3 shows these sticks in position.

Table I gives complete detailed cost of all the concrete work in Barn B.

Table II is a comparison of the average costs of all the concrete work on Barns A and B, the figures covering all charges except general supervision. The concrete aggregate is put at same figure in each to eliminate any difference in unit cost of these materials. The mix was practically the same in each, the largest percentage being 1:2:4. Unit costs for labor were the same in both cases—viz.: ordinary labor, $1.25 per day, and carpenters, $2.50 per day.

It will be noted more steel was required in B, but very much less form material and labor. The roof of Barn B required more concrete, as all beams and slabs had to be treated as simple members, whereas in Barn A full advantage was taken of the T sections. Making full allowance for these differences the actual cost of the concrete structure of Barn A over Barn B was 15 per cent. Both buildings were constructed by day labor from plans made by the writer and under his direct supervision.—Engineering and Contracting.

*

* *

Postponing duties until tomorrow postpones promotion much longer.

Advanced Ideas and Possibilities for the Future of San Francisco

By SAMUEL H. KENT, President the Builders' Exchange, San Francisco.

MY FIRST is to be the annexation of San Mateo County. This should be agitated now and brought about in the very near future, for the following reasons: San Francisco County is the smallest county in the State, being only about six miles square. The county line runs midway through the "Schrosen" tract, fast being populated with small homes. At least two-thirds of San Francisco will be eventually taken up with business houses. By business houses I mean the wholesale and retail firms, hotels, apartments, flats, etc., all of which are constructed for revenue. When a man with a family builds for a home he goes to the suburbs of the city. Now, when we allow that only one-third of San Francisco is available for private residences, where must the remainder of the home-seekers go? The only material outlet is down the peninsula. Even now, as you ride down to San Mateo on the electric cars, you observe on both sides of the road little homes springing up and making picturesque garden spots. As you ride further down you come to Redwood City, which has a good water way that only requires development to give water competition. I believe I have given but a few of the many reasons why San Mateo County should be annexed to San Francisco. At any rate there are enough for your readers to think about for a time.

The enthusiasm which has prevailed and the millions of money that have been and still are being invested in buildings and other improvements since the great fire, should certainly be a guarantee of the great future of San Francisco and the possibilities of its being the commercial city of the Pacific Ocean. New York has several large, wealthy commercial cities within a few hours' ride, but there is but one New York. So with San Francisco. There will be large and wealthy cities near by, but only one San Francisco.

My next thought is not altogether a new one, because it was suggested quite a number of years ago. Now that the population of Oakland is increasing so rapidly, it seems to me the safety of the people crossing the bay should be better guarded, and to this end there should be built two double-track tunnels. The tunnels would not only insure safety against the heavy fogs that prevail on the bay at some seasons of the year, but would relieve congestion of traffic very materially and facilitate more rapid transit than is now possible by ferry boats. Owing to the bay being located in the earthquake zone, these tunnels would have to be especially constructed and consequently very expensive, but with the advanced knowledge in civil engineering I have no doubt a safe construction could be brought about.

My next plan is to build a bridge across the Golden Gate, to Marin County. This may seem a little remote, but you have the Brooklyn Bridge and others in the East and Europe, as examples of what can be done.

Finally, we are told that General Diaz, of Mexico, has in view the annexation of all the small states down to the Panama canal. Should such an annexation take place it will be only a question of time when the United States will be obliged to acquire Mexico and all the country to the canal; and the Nicaragua canal will have to be built to handle the business, because I believe that it will be but a few years before the Panama canal will be unable to handle all the traffic that will come to it.

Remarkable Comparison of Good and Inferior Cement Aggregates

THE following is part of a report on a series of tests of cement aggregates, used in the new Palace Hotel foundation, San Francisco, made by Smith, Emery & Co., engineers and chemists. The test shows that some mighty poor sand and gravel are finding market in San Francisco and undoubtedly it will serve as a timely warning to architects and contractors who have been using poor aggregates. The report which follows represents the crushing of 180 prisms:

Summary of Compression Tests, Palace Hotel Foundations.

PRISMS: Mixed by weight. Tamped as in practice. Aged in moist air.

Mortar Prisms. 4" x 4" x 6" (1 cement 3 sand)

Concrete Prisms. 6" x 6" x 9"

"Santa Cruz" Portland Cement.

Average of 3 prisms—Lbs. per. sq. in.

Age of Prisms.	Bardin Sand.	S. F. Bank Sand.	Napa Gravel Screened	Palace Hotel Mixture. 1 S. F. Sand 1 Cement 2 Napa Gravel 4 Crush. Rock	Smith-Emery Mixture 1 Cement 2 Bardin Sand 5 Crush. Rock
7 days.	1731	415	448	809	1278
14 days	2331	761	691	891	1384
21 days.	2751	928	833	950	1603
28 day.	2953	929	844	1071	1920
60 days.	3353	1089	1271	1281	1965
90 days.	3853	1477	1716	1673	2254

"Dragon" Portland Cement.

Average of 3 prisms—Lbs. per sq. in.

7 days.	1088	318	324	381	596
14 days.	1214	557	514	471	712
21 days.	1319	574	530	609	1071
28 days.	1421	733	656	830	1193
60 days.	2051	771	703	860	1341
90 days.	2397	923	804	971	1414

Respectfully submitted,

SMITH, EMERY & CO.,
Bureau of Inspection and Tests.

* * *

Expenditure

"The architect estimates the cost of the new public building at a round million."

"Too little."

"Decidedly. He puts down the graft at only five hundred thousand."

"Absurd!"

"About what it would have been ten years ago."

"Making no allowance for the enormous increase in the cost of living?"

"Apparently not."

"Well, I declare!"—Puck.

* * *

Some people advertise in a journal because the paper is nicely printed, wise ones advertise for results. They are what count.

The New Art in Lighting Fixtures*

A RECENTLY published work on "The Decorative Periods" starts out with the proposition, which is apparently assumed to be axiomatic, that "all that is good in decoration is old; what is new is not good. New English is slang. The new in art is vulgar." There is no single word to characterize a statement that is self-evidently false; if there were it would fit this statement. New English is not necessarily slang. The term "illuminating engineer" is new, not being specifically defined in any of the late dictionaries, but it most assuredly is not slang. All languages are continually growing by the addition of new words and phrases necessitated by the progress in science and the arts. So great has been the recent growth of this kind that it has almost formed a new language. A chemist or electrician of the present time might readily converse or write in language that, while perfectly good, intelligible English to himself, would mean practically nothing to the layman.

All decorative art is based on elementary scientific facts, and grows and changes with the progress in their discovery and use. There was a time when each of the "decorative periods" was a new art. The Greek, Roman, Byzantine, Gothic, Dutch, English and French periods all had a day of origin and a time when they were new. To fall back on the saying that there is "nothing new under the sun," and that all the different systems of decorative art are merely different combinations of old elements, is a mere sophistry. A new combination of elements for a new purpose, or to express a new idea, is as distinctly new as the discovery of a new principal itself. It is upon this fact that the patent laws of the world are founded. That the new is, ipse facto, vulgar can not be maintained by argument or fact. The statement is as abhorrent to the artistic conception as the dogma of the predestined damnation of infants is to the religious sentiment.

The esthetic value of decorative art depends upon two things: novelty and association. That which is perfectly obvious, either because it contains only the most elementary principles, or because of a familiarity that has rendered it trite, can never appeal to the esthetic sense. A square table supported on four square legs is not a thing of beauty, even though it may be stained black and bear the proud title of "Mission," or "Arts and Crafts"; it may possibly have some esthetic value from association, if it serves to call up any of the emotions which would be produced by reading the history of the early Spanish missions on the Pacific Coast.

In the preface of the volume referred to the statement is made that "Decoration to be good must be consistent; to be valuable it must be historic." It is seldom that two statements so widely apart in their expressions of truth are found in a single sentence. The first statement is the very basis of all applied or decorative art; but the second is a mischievous fallacy, at least when taken in its literal sense. Had this latter statement always been followed to the letter there would be nothing historical in art today beyond the aboriginal and primitive forms. The art which expresses the sentiments and conditions of today is the historic art of tomorrow. Decorative art in fact is divisible into periods only for the reason that the progress of civilization has proceeded by pulsations or epochs. The historical period, whether in the political, material or artistic development of a nation, has its beginning in the originality and force of some individual genius. Simplicity and strength therefore characterize the beginning. The original idea then spreads through followers and pupils, and develops by

*Illuminating Engineer, New York.

the expansion and accretion of other ideas. Then, as the original idea and the earlier additions lose their novelty, development runs into mere elaboration, which finally degenerates into distortion and the use of wholly adventitious elements. Thus every period of applied art, whether in architecture or decoration, is characterized by an early period of strength and freshness of conception; an intermediary period of refinement and development of the original idea; and lastly a period of degeneration through superfluous and meaningless elaboration.

Reproductions of past forms of decorative art, taken from the period of their greatest refinement, are valuable for their historic interest and possess the esthetic value of association. Manifestly, the reproductions should be as faithful as possible to the original, otherwise they assume that most frequent and obvious quality of vulgarity in art—anachronism. A shining example of such vulgarity is the reproduction of a Roman lamp with a modern electric light taking the place of the oil flame, or a structure in the form of a torch with imitation candles stuck in the end.

Fig. 1

Fig. 2

The authors in the work referred to state in the third paragraph: "From the beginning art has always simulated nature." The manner in which the various forms or phases of nature will be simulated in decorative art will naturally depend upon the general attitude of civilization toward natural phenomena. Until recently all of the basic natural forms entering into decorative art have come down from the

Fig. 3

remote times of Paganism, when nature was conceived to be ruled by and be the personal expression of a large number of gods and demons. This view has been entirely obliterated in modern civilization by the ascendency of science. It would be naturally expected, therefore, that the simulation of nature in modern decorative art should express radical differences of feeling.

A beginning for such a modern artistic period has been made and is known as the "New Art," or in its French form, Art Nouveau. This modern school takes a broad and comprehensive view of nature, drawing indiscriminately from all sources, wherever grace of line and form may be found. The pagans' view of nature singled out a few forms which had special religious significance and conventionalized them to the greatest possible degree in order to simplify their use. The new art retains the natural forms as nearly as possible consistent with the mechanical details of structure.

Thus far this new art has made little progress in America. A canvass among the leading fixture manufacturers of New York disclosed the fact that in not a single instance was there any attention being given to developing fixtures along this line, the reason assigned being a lack of popular demand. New York, however, is not by any means the whole of the United States, nor even its final arbiter in matters of art. The West has shown a far greater disposition to seriously study the newer artistic motives, both in decorative art and in

Fig. 4

architecture. A catalogue of fixtures recently issued by a Western manufacturer contains a number of examples of new art designs, which form at least a decidedly creditable beginning.

Fig. 1 shows a chandelier which may be properly classed as "New Art," for the reason that it is a decided departure from the designs of all the previous periods. The construction is almost in the lowest terms of simplicity, and yet there is sufficient deviation from the purely mechanical to give it an artistic feeling. The ball in the center of the supporting ring, however, has no excuse for being and is therefore a blemish. The chain here is the actual

Fig. 5

Fig. 6

support, and therefore has an evident purpose. This is worth noting by reason of the fact that chains are not infrequently used as mere draperies, being attached to the ends of the arms and at some point on the central support higher up, falling loosely between these two points, and thus showing their absolute uselessness.

Fig. 2 exhibits a somewhat different mechanical construction, which is also extremely simple but effective. This simulation of nature is found only in the curve of the tubes carrying the electrical conduits, which are approximately catenaries. The catenary is the curve which a flexible body, like a rope or chain, takes between two points of support. The ring which holds the light sources is the simplest mechanical construction that could be used for the purpose. The fixture as a whole is an elementary demonstration of the fact that the laws of me-

chanics must be observed not only in truth, but in a manner apparent to the eye, in order to produce a satisfactory artistic effect.

Fig. 3 contains a much greater amount of decoration in the form of natural curves. All of the lines are in excellent proportion, and the spirit is well carried out in the form and coloring of the globes. The flexible support for the lamps is a distinct addition to the general effect.

Fig. 4 is another expression of the same general ideas. The curves have all been harmoniously blended, and the general proportions are satisfying to the eye. While the curves in both these examples are free and graceful, a careful analysis will show that the actual lines of stress are in accordance with good mechanical construction, hence their satisfying effect.

Fig. 7

Fig. 5 is an elaboration of the motif. It is particularly noticeable that the faces forming the chief feature of the decoration represent the actual, living American girl, instead of the totally inane, classical "female figure." The art is therefore in the highest and best sense historical. Should this fixture be brought to light a thousand years hence the face would give a fairly clear idea of the American type of feminine features of its period. The link-and-hook method of support for the lamps and shades gives the necessary freedom from rigidity.

Fig. 6 shows the use of some of the most irregular and unconventional curves found in nature, the combination being thoroughly consistent. Notwithstanding this irregularity in the way of deviation from modern curves, the motif is decidedly different from the Rococo work which is characteristic of one of the French periods. The latter meant nothing, having no apparent simulation to any natural form, whereas the design here shown at once suggests the irregular forms of roots or tangled branches.

Fig. 7 is a much simpler form, but distinctly characteristic of the new art. The use of the flexible cords instead of tubes for support is noteworthy. The mechanical strength and correctness of the fixture are also apparent.

* * *

Wake up, man, and take a tonic,
Bunch your hits and make a drive,
Run a page, and change your copy,
ADVERTISE and keep alive!

The Handsomest Cafe in the World.

THE new Café de l'Opera, in New York, is said to be the handsomest restaurant in the world. Approximately $4,000,000 has been invested in the ground and building, with the idea of making it one of the city's great show places. The interior decorations alone are said to have cost more than $1,250,000. Syrian palaces and a Japanese temple have been shorn of their treasures for this purpose.

The interior scheme shows balustrades and pergolas of black marble, shimmering in the lights, statues, and sculptures, winged bulls bearing pale flames upon their backs, and what is declared to be the finest staircase in America on the main floor. This is largely taken up by a marble "palace of music," modeled upon a structure of the time of Alexander the Great. One staircase, 22 feet wide, patterned after the famous great staircase of Persepolis, leads to the balconies. On the supporting wall has been placed the large painting of "The Fall of Babylon," by George Rochegrosse, which won a medal of honor at the Paris Salon eight years ago. It is 110 feet wide and 65 feet high, and was bought for $80,000.

The Temple of Music in the center of the main floor is 50 feet tall, and is built entirely of black marble, taking nearly the full height of the room. The pedestal is formed of one large solid block of marble, on which reclines an immense Assyrian lion. Bronze figures ornament the steps, and from the temple run pergolas to the balconies, which are supported by Assyrian columns of black marble, the capitals being double griffins taken from casts of originals.

On the balcony of the opera floor are eight bronze figures, life size, depicting the Court life of Assyria, above the heroic bronze figure of Victory. The orchestra balcony is on the roof of the Temple of Music.

The Temple of Nikko is on the second floor. Here are bronzes, screens, Japanese works of art, and sculptures brought direct from the temple in Japan. They include an embroidered peacock screen, which required eighteen years to complete, and is worth $8,000, and a bronze sacred fountain 10 feet in diameter. Black, gold, orange and blue predominate in the color scheme.

The restaurant contains the largest single carpet ever laid, 18,000 electric lights, 15 miles of conduits, a 60-foot kitchen range, and 10 miles of pneumatic tubes. The statues and bronzes weigh 30 tons, and 1,000,000 sheets of gold leaf have been used in the decorations. On the Japanese floor are 10 miles of Wistaria and 5,000 chrysanthemum blooms are ranged around the wall.

* * *

Claims He Will Revolutionize Building

THE following from the Indianapolis Star tells of Lieut. Parkhurst's inventions that will revolutionize building:

"The invention of a process which makes stone from earth—stone that is harder than granite, impervious to water and which can be moulded into any shape and produced in any color—was announced yesterday by L. M. Parkhurst, an Indianapolis man.

"Patents are pending on the process, and until granted the secret will not be made public. The invention is of a chemical operation, used in connection with an electrical apparatus of special design. The feasibility of the invention has been indorsed by State Geologist W. S. Blatchley, Prof. Michael Golden of Purdue University and the Smithsonian Institute at Washington.

"By the process building brick can be made for $1 a thousand, and from the very earth that is dug out from the foundations. The material can be manufactured and is better than concrete because impervious to water. A solid rock roadbed can be made for railroads, which will stand as long as solid granite would stand, and would obviate washouts and a tremendous expense which is yearly required to keep roadbeds in good condition.

"In fact, any construction that requires stone, brick, tile or concrete is open to competition of this new material, which, it is promised, will make better stone and cheaper stone.

"By the process any of the ingredients of the earth within 20 feet of the surface are eaten up by Parkhurst's machinery and turned out solid rock. It can be molded into any shape, in bricks, slabs or blocks. Street pavements can be constructed from it and the foundations for pavements, with the very dirt that is excavated for the foundation, with the machine right on the ground to make the transformation.

"'The very proposition itself,' said Parkhurst, 'means either nothing or a fabulous sum. I have been very careful not to take one step without scientific verification of my theory.'"

* * *

A "How To" Tragedy

Smith liked to study "how to" books, to add unto his knowledge—
On how to shave on railroad trains and how to sidestep college,
And how to make the hen game pay and how to write short stories,
And how to raise prize cabbages and also morning glories;
The latest of these wondrous works on which poor Smith has blundered
Is "How to Build a Bungalow for Less Than Seven Hundred."

It seems Jones lent the book to Smith, just as a passing favor,
For Smith was just about to build and sought a money saver;
Now Smith has spent three thousand flat and seeks still more to borrow,
The while the roofless bungalow looks like a haunt of sorrow;
And so alas! it comes to pass a friendship firm is sundered
By "How to Build a Bungalow for Less Than Seven Hundred."

—Denver Republican.

* * *

A Lay Matter

"Would you like the floors in mosaic?" asked the architect.

The Springfield man looked dubious.

"Would you like the floors in mosaic patterns?"

"I don't know so much about that," he finally said. "I ain't got any prejudice against Moses as a man, and maybe he knew a lot about the law. As regards laying floors, though, I kinder think I'd rather have them unsectarian."—Harper's Weekly.

* * *

The Line of Argument

"Father," said little Rollo, "what is the arctic circle?"

"The arctic circle, my son, is an imaginary line bounding a large area of uncorroborated evidence."—Washington Star.

Among the Architects

American Institute of Architects

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Employment of Architects on Public Buildings.

The Secretary of the Treasury has sent to Congress a letter asking further legislation to enlarge his power as to the employment and compensation of architects on public buildings. He recites that "under the provisions of the act of Congress approved February 23, 1893 (27 Stat. U. S., 468), the Secretary of the Treasury is authorized, in his discretion, to secure plans, etc., for public buildings, including the local supervision of the work, by competition among not less than five architects, and to make payment for the services of the architect whose plans may be selected out of the appropriation for the respective building."

After discussing the legislation already enacted he says: "Accordingly, I have the honor to recommend that the act of February 23, 1893, be amended so as to provide that in all cases where the Secretary of the Treasury elects to secure plans, etc., for public buildings, including the local supervision of the work, by competition among architects, that the Secretary of the Treasury be author-

ized and empowered to enter into contracts with the architects whose plans may be selected for their full architectural services, including the local supervision of the work, and to compensate them for their services from the annual appropriation for 'general expenses of public buildings,' available at the time payments are due."

Southern California Chapter, A. I. A.

Messrs. William Curlett and L. C. Mullgardt of San Francisco were guests of honor at the January meeting of the Southern California Chapter, A. I. A. New members were announced as follows: Norman F. Marsh, W. S. Garrett, A. C. Smith, C. F. Skilling, H. M. Patterson, B. M. Morris, Frank L. Stiff, and J. C. Smith. DeForest Howry is a new Junior member. A vote of thanks was tendered the membership committee, consisting of Messrs, Austin, Norton and Hillman, for their year's work. A committee consisting of Messrs. Austin, Myron Hunt and Parmentier, was appointed to frame a message of condolence to Mrs. Burnham upon the death of Franklin P. Burnham. A rising toast was given to Mr. Octavius Morgan, who was recently elected a fellow of the American Institute. A letter was read from Cass Gilbert, retiring president of the Institute, in which he stated he would work for Los Angeles as the next convention city.

For the evening's entertainment there were talks by Messrs. Curlett and Mullgardt, a lecture on high frequency currents by W. B. Palmer, illustrated by apparatus, and a lecture on the manufacture of electric wires by Ira J. Francis. Mr. John Parkinson, the returned delegate to the Institute convention, told of the work of the session.

San Francisco Chapter, A. I. A.

The regular quarterly meeting of the San Francisco Chapter of the American Institute of Architects was held at Tait's Cafe on Thursday evening, January 20th, with an attendance of 32.

Reports were received from the standing and special committees; a committee of five on publicity was appointed and resolutions on the death of Mr. Henry Kenitzer, an honorary member of the chapter, were adopted by a standing vote.

Mr. John Galen Howard, having recently returned from the A. I. A. Annual Convention at Washington, D. C., gave an interesting account of his trip and the proceedings of the convention, and stated the probability of the next convention being held in San Francisco.

McCarthy's Scheme to Build a Temporary City Hall.

"The mayor may go ahead with his scheme of putting up a temporary city hall in San Francisco," said former Supervisor Ralph McLaren, "but when he gets the building completed some months from now, what is he going to put in it? Four and five year leases are held by the city on fireproof buildings now sheltering some departments, and most of the other departments will be moved into the new hall of justice when it is ready, not more than 10 months from now.

"The hall will take in nearly everything now housed in the Eddy street quarters and the criminal branches of the superior court besides. The city attorney and the civil service commission are in the Grant building on leases to run several years. The board of works in all its main departments is well housed in the fireproof Hewes building, and the board of health has excellent headquarters on Mission street near Seventh, all these under lease.

"McCarthy can't build a temporary hall with money voted at a bond election for a permanent school. Besides, after he got his hall built, what could he do with it?

"As for the permanent city hall, the mayor, I believe, wants a $7,000,000 bond issue for that. Our late city architect, Newton J. Tharp, Albert Pissis and a number of the city's best architects have given us detailed estimates, allowing sufficient space for all departments, and calling for only $4,500,000. The people won't vote $7,000,000. The plan suggested by the last building committee to build a five section city hall in five years by a special 15-cent tax would be the best way of getting the municipality permanently into its own quarters, but McCarthy won't hear of that, I suppose, because the suggestion comes from the old board."

Class in Structural Engineering.

A class in the structural design and construction of buildings of all classes is about to be organized under the auspices of the San Francisco Architectural Club. The instructor will be Mr. Charles Derleth, head of the Engineering Department at the University of California, and one of the most eminent men in the profession.

Mr. Derleth will commence the course with the elementary work so that no member will have any trouble in following the instruction if he joins immediately.

The meetings of the class will be held in the clubrooms in the Commercial building, from 7:30 till 9:30 every Monday evening.

J. M. Robinson

Good Work of the Metal Trades Association.

The annual meeting of the California Metal Trades Association was held at San Francisco in January. J. M. Robinson was unanimously re-elected president, while Sam J. Eva was selected for first vice-president and Constant Meese for second vice-president. The members of the executive committee were chosen as follows: R. H. Postlethwaite, E. J. Fowler, George J. Henry, Jr., William F. Murray, John T. Scott, George E. Randolph, John A. McGregor and Otto Schrader.

Matters of general interest coming before the organization were treated by President Robinson in his annual report. Relative to the policy of the organization in avoiding active participation in public movements he had the following to say:

"Our attitude toward the labor unions seems not to have pleased some of our friends in the East and nearer home, and our association has been the subject of unfavorable comment in some of the trade papers."

In discussing the relations existing between the employers and the employes the president had the following to say:

"In anticipation of the expiration of the agreement your executive committee has taken steps to formulate a plan by which a new agreement may be made which may insure to us a continuance, for a definite period, of the tranquility which has been enjoyed since August, 1907.

"The history of the past twenty years in the metal trades of San Francisco has demonstrated the foolishness of strikes and lockouts, and the tremendous loss which they entail both to the employer and employe, while their ultimate consequence, if often repeated, would mean the utter annihilation of our industry."

Commissioner H. U. Kerrigan read a very interesting paper on "The Real Truth of Conditions and How to Improve Them." After discussing conditions in general he made the following comment:

"The city in general with modern buildings and retail stores has progressed, but the manufacturing industries are still in the rut. They have not kept up with the general prosperity. Manufacturing has had a terrible setback and will be slower to recover, especially the iron and steel industry."

Improvements on the Oakland Water Front.

Plans are being rushed and it is hoped to have work started by March 1st, on the extensive waterfront improvements planned by the city of Oakland, for which a $2,500,000 bond issue has been voted. The first work will be done on the western water front, where $500,000 will be expended. The improvements will consist in developing the space between the Key Route pier and the Southern Pacific mole for commercial purposes. This includes a distance of some 6,500 feet. A street 200 feet wide, running along what is known as the United States hulkhead line will be built. Piers will be placed along this line, and three streets from the heart of the city will be opened up to it. The three streets will be Seventh street on the south, Twelfth street in the center and Thirty-fourth street on the north, and they will give accommodations for vehicles to reach the water front. A 2,000-foot wharf will also be built to the center of this street, and the channel in front will be dredged to a depth sufficient to accommodate deep sea-going vessels. On the other side of the Southern Pacific mole another wharf 500 feet in length will be constructed, the channel will be dredged and a street leading from the wharf to the foot of Chestnut street will be opened. F. C. Turner is city engineer.

D. Franklin Oliver Retires.

As stated in the January Architect and Engineer, the architectural firm of Oliver & Foulkes, San Francisco, has been dissolved, Mr. Oliver retiring, while Mr. Foulkes continues the business with Mr. E. H. Hildebrand as his associate. Mr. Oliver has retired permanently from active work, after having practiced the profession successfully for many years. He is stopping for the present at the Palace Hotel.

Personal Mention.

James C. Green, architect for William R. Hearst, announces that he has withdrawn from the firm of Kirby, Petit & Green, and will continue the practice of architecture with offices at 103 Park avenue, New York city. Mr. Green also maintains a San Francisco office with Architect W. O. Woollett in the Monadnock building.

Frank Stiff, certificated architect, has resigned his position with Architect A. F. Rosenheim, of Los Angeles, and has opened an office on his own account.

J. Constantine Hillman, certificated architect, for several years past connected with the firm of Hunt & Grey, architects, has opened an office at 444 Chamber of Commerce building, Pasadena, for the practice of his profession.

Edward S. Cobb, engineer specializing in mechanics, hydraulics, reinforced concrete and heavy construction, has removed his offices from the Pacific Electric building to 427-28 Central building, Los Angeles. Mr. Cobb has been connected with many large construction enterprises throughout the Southwest and for several years has been construction engineer for the Huntington Electric systems.

Sidney B. Newsom has removed from the Humboldt Bank building, San Francisco, to commodious and artistic quarters at Twenty-fourth and Valdez streets, Oakland. Raluh Warner Hart has taken Mr. Newsom's former offices in the Humboldt Bank building.

Coalinga School Building.

The plans of Architect Louis C. Stone of Oakland have been accepted in competition for a $40,000 schoolhouse to be built at Coalinga, Cal. The structure will be of brick, 60 x 120 feet, two stories and basement high, and will contain nine class rooms and a large assembly hall. The exterior will be of cream colored pressed brick, and the building will have a cement basement, composition roof, plenum system of heating and ventilation, and modern school equipment.

Engineers and Architects Meet.

The January meeting of the Engineers' and Architects' Association of Los Angeles was held at Hollenbeck Cafe, A. F. Rosenheim, first vice-president, presiding. Following the usual dinner and social hour the minutes of the preceding meeting were read by Secretary H. Z. Osborne, Jr., and approved. The new officers of the association are: A. F. Rosenheim, president; Homer Hamlin, first vice-president; Frank D. Hudson, second vice-president. Thomas D. Allen, S. R. Burns, John Parkinson and Samuel Storrow constitute the board of directors.

Architect Meyer Very Busy.

Plans are in preparation in the San Francisco offices of Frederick H. Meyer, architect, for several buildings involving considerable cost in each instance. One of the structures will be a six story apartment house to be erected for the Schmiedell estate on the southwest corner of Post and Jones streets. This will be of Class C construction. It will contain 63 apartments. The estimated cost is $140,000. The exterior will be of pressed brick trimmed with terra cotta.

There are several new features embraced in the plans. One of these is a large entertainment hall for use by the tenants and of sufficient size to accommodate dances and other assemblages. On the first floor there will be a lobby finished in hard woods, 40 x 60 feet. Every apartment will have an electric dumb waiter service. Freight and passenger elevators will be operated by electricity. Every apartment will have its bathroom lined with tiles. The vacuum cleaning system will be operated throughout the building.

Mr. Meyer is also preparing plans for a banking structure of stone to be erected in Bakersfield at an estimated cost of $40,000, at the junction of Eighteenth street and Chester avenue. The structure will be one story high, the plan much favored by bankers in recent buildings. This is in addition to the $400,000 court house for Kern county for which plans are now being made by Mr. Meyer.

Concrete Pier Settles.

The harbor commissioners received a scare recently when one of the concrete piers supporting the apron in the ferry depot slip used by the Key Route steamers, San Francisco, suddenly settled down a distance of one foot. It was feared for a time that the sinking of the pier might indicate something seriously wrong with the foundations of the ferry house, but an investigation satisfied Engineer Barker that the trouble was purely local.

The concrete pier that sank was built on a pile foundation. The piles were driven deep in the mud and the concrete set on top. When the pier was built the mud came up to the concrete and protected the pile support from the teredos. It is believed that the propellers of the ferry steamers have washed away the mud from the piles, which have, it is thought, been eaten away by the teredos. The teredo that took the last bite is probably sepulchered in the wrecked foundation.

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President Taft must have spoken hastily when, favoring ship subsidies, he criticised the second-class mail rate as a subsidy to our newspapers. True, if that mail rate was not so low, the cost of our newspapers and magazines would be prohibitive to a great many families. This reading matter is of inestimable value to the country at large and the increasing of the mail rates would not only work a hardship upon the private interests owning these papers, but would be a veritable infliction upon the great majority of our people. Moreover, as the Duluth Herald points out, are we so sure that our post office deficit is attributable solely to our low newspaper rates?

TAFT AND SHIP SUBSIDIES

Canada, with a rate much lower than ours on newspapers, not only does not suffer from a deficit but has an actual surplus postal revenue. A ship subsidy might benefit a small number of seafaring workmen, but we are sure that it would greatly benefit a very, very few individual dividend seekers.

Besides, without assuming to be authoritative upon the subject, we firmly believe that with all the subsidies any Congress could grant our shipping, there would be scant mending of the present situation. On account of the cost of labor, ships are built abroad for infinitely less than we can build them. Materials are cheaper. Sailors can be had at half the wage ours demand and are fed at a quarter of what it costs to feed an American. And, again, nearly all foreign ship lines are heavily subsidized by their own governments, with the total net result that an American vessel, manned by American sailors, can not compete with the foreign lines unless we subsidize so heavily that we can carry freight for nothing. And there is blessed little sentiment in a freight-shipper. He is going to send his goods by the ship that makes the lowest rate of carriage.

In our humble opinion our "Commercial Navy," like our American bison, is gone. There is no use crying about it and we might as well turn our attention to other things.

ARCHITECTURE AND THE PRESS

By all means it is desirable that architecture and architects should be more talked about and more written about than at present, and with appreciation and knowledge, if possible. This seems to be the text of the paper which Mr. A. Needham Wilson read recently before the Architectural Association of London. It may be admitted that in the past the non-technical press has taken very little account of architectural works, and that when they had occasion to refer to new buildings at all, the architect has been the last person mentioned in connection therewith, if, indeed, his name was not omitted entirely. It may also be allowed that there is a great deal of public ignorance about architecture, and that it is a scandal for the leading daily papers to send reporters, who are entirely ignorant of the subject, to write upon drawings submitted in competition.

The fact of the matter is, that architecture does not appeal to the public in a dramatic manner. The daily press can not be expected to take note of any but the news of the moment. Buildings rise extremely slowly. At no one period do they come prominently before the public, except in the case of the very greatest, on the day of the opening, and in very rare instances when a competition which has been decided for a building about the need for which a controversy has raged. It is not, therefore, in the ordinary course of things to be expected that current newspapers shall take much notice of buildings, whether they display architectural merit or not. It is much less to be anticipated that they should even mention architects as such—they do not come with sufficient prominence before the public eye. It is not, therefore, through the press that we should expect architecture to be popularized. The educating of the public taste to an appreciation of good buildings can only be done by exhibiting good buildings; in other words, it can only be done by training ourselves to such an extent that we can design none other than good buildings, so that in the course of a generation or two the beauty of our streets should be such as to compel attention.

BETTER HOMES BEING BUILT

The fact that it requires 300,000 new houses to supply the natural increase, yearly, of the population in this country, almost all of these having in the past been built of wood and therefore highly destructible, and that an average of 84,000 actually do burn down every year, causing much loss of life and enormous loss of property, is impelling people to adopt better modes of construction.

The "American Architect," commenting upon this changed attitude, adds:

> Under these conditions affecting practically the entire population of civilized countries, it is only natural that sooner or later every device that commends itself either from an artistic or utilitarian viewpoint, every mode of construction that offers advantages should be adapted to use in the construction or equipment of the modern residence. Among the latter is found the modern fireproof house. Only a few years since, fireproof houses, except in the case of pretentious dwellings, were practically unknown. * * * The change that is taking place seems to be due quite as much to the development of the art of construction as to the general tendency for better buildings and more permanent materials. The specific development in the case under consideration consists largely in the adaptation of hollow terra cotta blocks for house walls, using standard forms for interior construction. This material, covered with rough cast or plaster, has been the important factor in the greater number of small fireproof dwellings erected.

HEATING AND LIGHTING

The Relation of the Architect to the Illuminating Engineer.

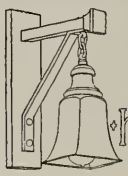
By ALBERT WAHLE in the Illuminating Engineer.

IN presenting this paper for consideration I am guided solely by a desire to impress upon the illuminating engineer that, in my opinion, the co-operation of the architect is absolutely necessary in planning the lighting in all building operations. The problem, as it appears to me, is, How shall you present your qualifications so as to warrant serious consideration on the part of the architect today?

The method to be used is open for extended views, and I am in hopes through this means of bringing about such a broad and general discussion by the architect and engineer as will eventually suggest a course resulting in this very necessary co-operation.

The illuminating engineer represents a field practically new in the professional world, but unlimited in its scope, embodying the economical and efficient lighting of all building operations. There are individual illuminating engineers who today are recognized by the architect; but all ought to be as a body, and it is the latter condition which I consider the serious phase of your future. There is no question that the illuminating engineer represents a profession already established (and possibly without any specific aid of the architect), but in my opinion along utilitarian lines. Your profession warrants a greater future than that represented by commercial requirements, and although you must be practical, it is absolutely necessary that you go further and apply your knowledge of what is proper for an efficient lighting result to the aesthetic, as established by the architectural profession. Your profession does not differ materially from others in being primarily a commercial proposition; yet there can be no question of its importance as representing a field for development of a great scope, but necessarily limited to those who realize their opportunities.

I have no desire to appear in the role of a champion, but I have been for a number of years in close touch with architects in all sections of this country and I assume to know, to a great extent, their ideals. I have been strongly impressed with their genuine enthusiasm for that which is artistic and appropriate, the earnestness with which they insist upon this at all times, regardless of conditions, and the consideration given to the individual who has demonstrated his qualifications in any given capacity. There are exceptions to this, as in all professional walks, but there can be no question that architecture em-



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bodies practically a thorough knowledge of every industry connected with building operation, representing innumerable details requisite in planning and supervising the erection of buildings, monumental or otherwise. It is true that architects have the assistance of the artisan and engineer in all branches, yet they unquestionably are the moving spirit and establish the basis for that for which they assume entire responsibility.

This, then, represents a profession that covers the entire field of art; for although the structural part of any building is an absolute necessity, yet it only forms a groundwork, or background, for the application of art in all its branches. I feel, therefore, that this is the natural field wherein the illuminating engineer must look for a future, and it lies entirely within your province to convince the architect that you are a necessary adjunct in designing the lighting in all building operations, which unquestionably is one of the important factors in a general result.

Now it occurs to me that when an illuminating engineer assumes the responsibility of planning the lighting (I will say, for example, in the drawing room of a residence or the counting room of a bank) he must thoroughly appreciate, or at least make an effort to learn, the character and requirements of the room; and when he allots a number of outlets he should have in mind the form of fixture requisite, or, in any event, what distribution of outlets will insure an efficient lighting system, in the form of fixtures or brackets, or both, that will fit decoratively and therefore be a necessary part of the room or rooms. I do not mean to imply that you must be an authority on art to qualify as an illuminating engineer, but you can not apply the same rules that govern a commercial proposition to the types I have given as an example; and when you are consulted in the capacity indicated by your profession, your first duty should be to determine an appropriate lighting source, and if not competent to judge, then have the architect indicate (if only in a general way) what his ideas are, which will enable you to establish a light source that will conform to the requirements.

With this as a basis, you then have an opportunity to apply your science, economically and efficiently. There are cases where efficiency is not a serious consideration and where a pleasing result is a factor; but here again the architect must guide you. This course, if persistently followed, will eventually make it possible for you to assume this added responsibility, so necessary to a successful result.

It has become a common occurrence to hear the architect (as also the fixture manufacturer) censured for a poor result, when, as a matter of fact, the en-

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gineer had sole power to establish a basis that would result harmoniously, but failed utterly to grasp the requirements beyond furnishing light; or, to be more specific, simply provided sufficient candle power to insure light, but to all appearances had no conception of what would be proper as a light source. I make this statement guardedly and without a spirit of criticism, knowing thoroughly well that the co-operation I have in mind does not, or at least has not, existed except in a limited way. This condition can not continue, as the demand for lighting results that embody an application of the arts to your science has become a crying need and must receive the serious consideration of your profession as a body if you want the censorship of the architect and fixture manufacturer, which some of you have already assumed, taken seriously.

There can be no excuse for poor lighting results. You have at your disposal high-efficiency lamps that unquestionably will develop to a still higher plane, and you have auxiliaries in various forms that tend to an increased efficiency—a combination that can be applied to any result, aesthetically or otherwise. You also have as a criterion innumerable examples of buildings of all classes, showing varied ideas or forms of lighting, that can always be considered as a basis for good or bad. Furthermore, you have the better element of the fixture manufacturing industry that you can look to for assistance in any form requisite.

However, I strongly contend that the architect combines every element necessary to your profession, and which, if cultivated, will establish you on a plane that will assure recognition and, consequently, co-operation of the architectural profession. I have no desire to appear arbitrary in my views; on the contrary, I want them considered as suggestive, although they represent the result of close observation of conditions with which I have been in contact during the last few years.

What Causes the Hot-Water Faucet to Run Both Hot and Cold Water?

To the Editor: The hot-water faucet upon the lavatory in the house of one of my regular customers has always acted in a peculiar manner, for which I would like an explanation from you in the columns of "Questions and Answers." When this particular faucet is opened for a short time lukewarm water will run to the quantity of perhaps half a pint or so, after which a couple of quarts of quite cold water will run. This will be followed by fairly warm water and then real hot water at last is drawn, which is satisfactory.

Now, my customer kicks, and I want to know what can be done to remedy the matter and what is really the cause of the whole business. In answering soon, you will greatly oblige a reader from the

"Golden Gate."

The following answer is furnished by the Editor of Domestic Engineering:

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"From the manner in which this hot water pipe and faucet works it is a safe bet that the system is not placed upon a circulation. The manner in which this water comes, which appears to be such a curiosity, is merely the result of very natural conditions. The water came after this fashion: First, lukewarm, then cold, then fairly warm, and finally hot. That faucet was on one end of a ½-inch or ¾-inch pipe, while the range boiler was at the other, and it would be a safe guess that this hot water pipe had some dips in it. The first lukewarm water stood in the pipe immediately under the lavatory, while the cold water was lying along the dip somewhere and then flowed forward and into the bowl. This accounts for the lukewarm water and also the portion which was cold. Now the warm water was the first hot water that flowed out of the range boiler; but it was cooled somewhat in passing through the cold portion of the dip in the run. That accounts for the warm water which came after the cold water. Then the hot water which was the last arrival was, of course, drawn from the storehouse or range boiler, and could come, only, when all the rest had cleared the right of way, so to speak, and this is the perfectly natural explanation of the whole trouble.

"The manner in which the difficulty may be removed is to place the hot water pipe on a circuit and run short branches from this circuit to the fixtures, when it will be found that hot water will be drawn almost at once at the lavatory."

A Tip to the Wide-Awake Plumber.

By "Live Wire" Blackiston.

Owing to considerations of safety, economy, convenience, underwriters' rules and various other reasons, nine-tenths of automobile owners are installing storage tanks for gasoline.

These tanks are always placed some distance from the point of outlet, the gasoline being piped to the garage. The efficiency of gasoline depends entirely on the quantity of gas retained by the fluid, and since it vaporizes rapidly on the slightest exposure to the atmosphere, the tank and all pipes and connections must be absolutely air-tight, making compulsory good workmanship in installing the outfit.—Enter The Plumber.

Of course all of the usual pipe fitting is done by a plumber, but—and herein lies the above-mentioned "tip"—what's the matter with the plumber acting as salesman for the whole outfit, tank and all? He sells hot water and other types of tanks, why not air-tight gasoline tanks?

There is a good profit in them and a sale of this sort often leads up to a patronage which is most desirable, since the average automobile owner is fairly well supplied with this world's goods.

The sample tanks do not take up any more space in a showroom than the ordinary closet fixture, and they require very little demonstration. The convenience of ordering a tank and connections complete from one dealer is a potent argument and one that need not be dwelt upon here.

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The only question for the plumber to decide, is the sort of tank to handle. There are various kinds in the market, but it is not the purpose of this article to boost any of them. It is suggested, though, that the tank selected be one so constructed that leakage is impossible—the seamless kind answers this requirement. Riveted tanks may or may not fill the bill—experiments along this line may prove costly. The pump is a secondary consideration, as any good pump will do the work if the tank and piping are the right sort, although good practice suggests the use of the simply constructed air-pressure pump. Valves in suction pumps sometimes deteriorate, through contact with the gasoline.

The proposition looks good, and it is to be hoped that the plumber who has an eye open for new business, will corral, rope, tie and brand this opportunity as his own.

Proper Plumbing for Residences.

THERE is no more vital feature in the construction of a home than its plumbing. No defects afford such discomforts as improper drainage, water supply and fixtures.

The principal features which one should strive to obtain are: A sufficient supply of hot and cold water at all times and at all points, for cleaning as well as for flushing purposes; economical connections; a piping system properly graded, connected and ventilated; pipes of correct dimensions, run straight, with few, and no unnecessary bends, and provided with the best turns and offsets and cleanouts; fixtures that are open and accessible and of good materials.

Not only should the drain and sewer pipes be ventilated, but every pipe from every fixture in the house should, at a point above every fixture, be connected by a pipe with a vertical ventilating pipe, bringing fresh air to every fixture. These ventilating pipes should be two inches where carried to water closets; one and one-half inches where carried to sinks, tubs or lavatories.

In running the sewer and drain pipes it should be seen that cleanouts are left in accessible positions, that proper pipes are employed wherever a horizontal pipe is run into a vertical one, that the openings about the pipes through the floors, ceilings and walls are tightly sealed or

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packed, and that the ends of ventilating pipes come far away from dormer windows and in the least conspicuous places.

The drain pipes carrying the water from the various fixtures to the main pipes should be four inches from the water closets, while from the other fixtures two inches is sufficient.

The pipes providing the house with water are the last. They should be made of galvanized iron and of different sizes. The connection which is made to the water main outside the house should be laid below frost and is generally one and one-quarter inches or one and one-half inches in diameter. This should be extended horizontally through the basement or cellar, as well as vertically up through the house in such courses as to give ready connections to all points of supply. The best sizes for the pipes or branches are, for those supplying bathrooms, laundry tubs, kitchen sink and outside sill-cocks, three-quarters of an inch in diameter; while a one-half inch pipe is sufficient for the housemaid's sink, and one and one-quarter inch pipes necessary for the supply to the kitchen boiler. From the boiler the hot water main is carried up of the same size as the cold water main, and with various branches of similarly corresponding sizes. It is not expensive to install good and sanitary bath fixtures. The size and shape of the bathroom, the relative position of the fixtures, and the run of their pipes, should all be considered. Of course, nothing is nicer than to tile the floors and walls up above splashing height, finishing the top and angles with sanitary molded caps and bases, easy to keep clean. A vitrified tile is more serviceable for the floor, as you do not slip on it when your feet are wet, while the glazed white tile looks better on the wall. But tiling is expensive, not only in itself, but because floors and walls must be specially prepared with concrete and wire lath to properly take and hold the

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tile. Tiling the floors and walls of the average sized bathroom up to a height of five feet will cost about $160. You can, however, obtain a very clean and waterproof surfacing to walls and floors at a considerably less cost. They can be spread directly on the old or new wooden under-floorings; they last well and you can turn a hose on them as easily as on tile. You can have them finished in all colors. Run them also up a foot on the sides of the walls as a base around the room, rounding the angles, and then plaster the lower five feet of walls with a hard cement. The man can line it off neatly with his trowel in six-inch squares and finish it with a round molding for a cap. Five coats of white paint, the last two being enamel, will give a very close imitation of the tile and a very washable and serviceable surface. Sheathing the walls with wood and varnishing it is an alternative, but not as advisable.

The bathroom fixtures vary much in size, material, shape and cost. A five-foot tub is the size most extensively used. The material for both tub and the lavatory should be porcelain enamelled iron. The water closet bowl should always be porcelain.

Better Conditions for the Electrical Contractors.

F. V. Meyers, secretary-treasurer of the California State Association of Electrical Contractors, writes as follows relative to the progress being made by the organization:

"A recent meeting of electrical contractors at Sacramento was attended by W. S. Hanbridge, president; E. R. Boynton, director, and F. V. Meyers, secretary-treasurer of the State Association. A thoroughly interesting and instructive session was had and almost every electrical contractor in Sacramento was added to the membership of the State Association, and steps were taken preliminary to forming, without delay, a district local.

"In Oakland the membership is increasing and in Los Angeles such energy has been displayed that practically every electrical contractor there and in that vicinity is now a member of the State Association and of the district local in that jurisdiction.

"Stockton, Fresno, San Jose, Bakersfield and San Diego are contributing, or will contribute, in the very near future, their proportionate share of members, and altogether everything is rapidly reaching a condition which will make the organization very influential.

"One of the subjects which will have attention all over the State will be the question of the betterment of the standard of electrical installation, and in this

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regard the influence of the Association was potently felt recently in San Francisco, when it procured the enactment of an ordinance by the Board of Supervisors which requires all electrical installation for light or power service installed after the 20th day of February to be encased in conduit.

"In July, 1910, the first annual convention of the State Association will be held in San Francisco, and the determination exists to make it an event in the history of the electrical contracting business on the Pacific Coast, and beyond any doubt a very large, enthusiastic and beneficial meeting will result."

Popularity of the "Electric Weld" Boiler.

The Electric Weld combination boiler and gas water heater has proved a real boon to housewives on the Pacific Coast and the sale of the boiler the past year has been almost phenomenal. It combines in one fixture features of both range boiler and gas water heater, is inexpensive and easily operated. Architects specify it in preference to all others for moderate cost apartments and cottages.

It gives running hot water at 90 degrees instantly, from the lighting of the gas, at the full rate of a ¾-inch faucet with city pressure.

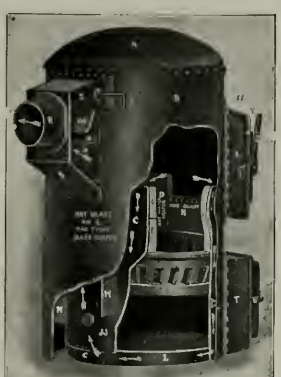
It gives a hot bath for less than a cent with gas at $1 a thousand. A barrel of water at 140 degrees for two cents. Ample for family laundry for a few cents. Unlimited hot water for a family using several bath rooms, laundry and kitchen for half a cent an hour.

The heating parts of the Electric Weld combination boiler are of brass and the construction is very substantial. No delicate parts to get out of order.

The Electric Weld burner with adjustable mixer gives perfect combustion. As all of the heating parts are surrounded by water, there is no heat leak. Every unit of heat is kept at work on the water.

The result is—a cool kitchen; satisfaction and comfort to the user and the user's enthusiastic endorsement of the Electric Weld combination boiler.

The John Wood Manufacturing Company are sole agents for the Electric Weld boiler on the Pacific Coast. Offices and supply houses are maintained at San Francisco, Oakland and Los Angeles.



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Bankers' Hotel.

The Oakland bankers have finally awarded the contract to build the much-talked-about tourist hotel, and construction work has at last been started. Percy J. Walker has the contract on cost—plus a fixed-sum basis. Bliss & Faville are the architects.

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By the Way

Some Industrial Information Worth the While

A Busy Roofing House.

The H. D Samuel Company, with offices at 23 Valencia street, San Francisco, and 508 Telegraph avenue, Oakland, report having had an exceptionally successful year during 1909, while the new year promises even better things for this hustling roofing house. An important contract closed by Mr. Samuel the past month was for roofing the new Prager department store building at Market and Jones streets, from plans by Architect Sylvain Schnaittacher. This building will be roofed with reinforced Malthoid, the contract price being about $2,000. This is a special roof of exceptional quality and is manufactured exclusively by the Paraffine Paint Company, being one of the best of its several grades of Malthoid roofing. Other contracts that will be completed this year by the Samuel Company are the Children's Hospital and the Harris apartments at McAllister and Hyde streets, Bliss & Faville, architects, and St. Vincent's Hospital, San Francisco.

Among the buildings roofed the past year were the Doernbecker building on Howard street and the Sloss garage, both of which were done as sub-contracts under Frank Garden, the San Leandro grammar school, designed by Architect William H. Weeks, Frank Somers, contractor, and the sub-stations of the Pacific Gas and Electric Company at Davenport, near Santa Cruz and at San Rafael, the two latter with reinforced Malthoid.

For some time the company has been making a specialty of waterproofing basements and deep cellars and they have met with exceptional success in this branch. The rear wall of the Orpheum theater was waterproofed by the Samuel Company, as were the Gunst building at Grant avenue and Geary streets in San Francisco, and the Wells-Fargo building in Oakland. Mr. Samuel employs a corps of experts and a contract with him is ample guarantee that the work will be done right be it either waterproofing or roofing.

A Concrete Mixer That Mixes.

Contractors in search of a first-class concrete mixer should send to the Clover Leaf Machine Company of South Bend, Ind., for one of the company's new catalogues. It contains a great deal of interesting material and some valuable information for those engaged in concrete work. The Clover mixer does the mixing without wings or deflectors and is easily kept clean.

The patented shape of the drum is an exclusive feature of the Clover Leaf concrete mixer, the operation of which has fully demonstrated its superiority over all other primary principles for mixing concrete.

Improvements of the application of this exclusive principle have from time to time been made, which render the operation more simple and valuable.

Each step towards perfection has been taken upon the basis of experience and

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increased usefulness, until today there are combined a larger range of operative excellence than is present in any other machine.

The company's facilities in shop equipment, mechanical direction, and almost unlimited observation and experience, have always given active expression and application to the sterling basic principles which underlie the Clover Leaf machine.

The Clover Leaf principle has many advantages. The machine can be relied upon to produce a mixture which is absolutely uniform in character.

Frequently a larger volume of water is employed to make sure that the cement is carried to all parts of the mixture. This is unnecessary with the Clover Leaf mixer, because the mixing is so thoroughly accomplished that the different ingredients are equally distributed without the presence of any water whatever. Therefore it is possible to use the smallest possible amount of water and produce a mixture of proper consistency to facilitate the process of setting, in accurate conformity to the method adopted by the contractor.

A recognized authority on concrete construction has said: "Every drop of water more than is necessary to use in accordance with the plan adopted is a positive hindrance, and to a certain degree retards the process of setting."

Here is one of many warm testimonials received by the company:

"We are more than pleased with the Clover Leaf Concrete Mixer purchased of you, having found it to be even better than represented by you. We have used several other mixers, and by comparison do not hesitate to pronounce your machine superior to the best we have used heretofore. The entire equipment you furnished us, including engine, trucks, etc., we find to be a strictly high-grade outfit. For perfection of mix and ease to keep clean, we do not consider that there is at this time another mixer on the market that approaches the Clover Leaf.

"DEMING-WINNIE LUMBER CO.,
"J. D. Kuhns, Sec., South Bend, Ind."

The Tiled Floors in the Hotel Sacramento.

More than 15,000 feet of vitrified floor tiling was laid in the main lobby and in the bath rooms of the Hotel Sacramento, which is illustrated in this issue. A glance at the photo reproduction of the lobby gives one some idea of the quantity of floor tile used. The tile are in two colors—white and buff—which make a very pleasing combination. Glazed wall tiles are used in the public toilet while the floor of the loggia is finished in red Welsh quarry tile.

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Parker-Preston Company's Coast Offices

Parker, Preston & Co. (Inc), Norwich, Conn., manufacturers of Waterproof Paint Specialties for Cement Brick and Plaster, as well as Waterproof Shingle Stains, have opened a San Francisco office in the Monadnock building.

The June number of The Architect and Engineer gave an account of the establishing of a Coast office at Los Angeles and it was the intention of the company to open its San Francisco office at the same time, but owing to unusual building operations in Southern California, during the summer and fall, it has required the services of both the Pacific Coast managers in the southern territory.

Parker, Preston & Co. have many of the largest buildings in the East on which their Waterproof Paint Specialties have been applied, and the results that have been attained from their use is a credit to the untiring efforts of the firm to place an article on the market of real merit.

The Wells-Fargo Company's building at Portland, Ore., on which Parker, Preston & Co.'s Weatherproof Coating was applied, is one of their monuments on the Pacific Coast.

The floors of the Hotel Virginia at Long Beach and Hotel Maryland at Pasadena have recently been coated with Parker, Preston & Co.'s Adamant Cement Floor Coating.

Mr. E. H. Olney is in charge at San Francisco and from his practical experience in construction with the Westinghouse Church-Kerr Company of New York city, on some of that company's largest engineering work, together with his knowledge of paint, puts him in a position to render valuable service to his company as well as to architects in San Francisco.

Mr. C. C. Olney continues to manage the Southern California territory, with headquarters at Los Angeles.

Strengthen Steel Inspection Department.

Smith, Emery & Co. (Inc.), Engineers and Chemists, announce the following inspection department extensions, beginning January, 1910: Iron and Steel Inspection Department—San Francisco, chief inspector, W. F. Richards, of Philadelphia; Los Angeles, chief inspectors, E. O. Slater and E. G. Harpham, of San Francisco; Pueblo, Colo., chief inspector, M. L. Kulp, of St. Louis; Birmingham, Ala., chief inspector, R. T. Miller, of San Francisco.

The Pittsburg Testing Laboratory, Inspecting and Testing Engineers, Pittsburg, are erecting a large five-story fireproof office and laboratory building to house their rapidly growing business. They are represented on the Pacific Coast by Smith, Emery & Co.

Good Millwork in the Hotel Sacramento.

The splendid millwork in the Hotel Sacramento, illustrated in this number, was turned out by G. W. Kapp, general contractor, of 815 S street, Sacramento. Mr. Kapp furnished all the door and window frames in the big hotel, also the doors, which are of Oregon pine and Jenisero, the latter wood being used for the doors in the club rooms. The dining-room is in Oregon pine with mitre finish. All the wood was kiln dried by Mr. Kapp in his own drier.

The New Electrical Ordinance.

On February 20th the new electrical ordinance passed by the San Francisco supervisors became effective. One of the most important features of the new ordinance is that adjacent to either floors or ceilings of buildings one and one-eighth inch "furring" strips should be provided, to avoid notching or cutting joists for conduit. The section referred to is as follows:

Section 1. All wires hereafter installed in or on buildings or other structures within the fire limits of the City and County of San Francisco, and used for conducting electricity, shall be inclosed as thus installed in "National Code Conduit," or other approved armored conductors; provided, however, that such wires when used for telephone, telegraph, district messenger, call bells or similar systems, are exempt from the foregoing provisions.

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Silva Company Completes Important Contracts.

Three contracts of note recently have been completed by the Silva Heating and Plumbing Company of 140 First street, San Francisco. In the Peralta apartments at Thirteenth and Jackson streets, Oakland, Oliver & Foulkes, architects, the Paul vacuum system of heating was installed at a contract price of $18,300. The two big boilers supply 4,200 feet radiation distributed through 278 radiators on five floors. The system not only supplies steam for heating purposes but it heats the water in every apartment for domestic use. There is also a Canton 10-rack clothes dryer in the laundry, the clothes being thoroughly dried in 15 minutes by hot air from an Ideal boiler which has a capacity of 750 gallons and burns oil for fuel. The architects are said to be highly pleased with the plant.

Another contract recently completed by Mr. Silva is the heating of Hale Bros.' new building in Sacramento, Seadler & Hoen, architects. The plant includes a boiler of 5,500 feet radiation with oil burning apparatus and a one-pipe system for each floor. It is the only job of the kind in the Capitol city at the present time. The contract price was $3,800.

At the Stockton State Hospital a tunnel of reinforced concrete has been built from the boiler house to the new receiving building, a distance of 600 feet. The steam is successfully carried through this huge concrete pipe, four feet in diameter, to the 72 radiators in the receiving building. The latter is a two-story structure and was designed by State Engineer Nat Ellery.

All of the three jobs described above were done under the personal supervision of Mr. F. G. Silva, who is a master plumber as well as a thoroughly competent heating engineer.

Norris Company Incorporated.

The L. A. Norris Company has been incorporated to carry on the business of the Clinton Wire Fabric Company. The main coast offices are in the Monadnock building, San Francisco, with branch agencies in Los Angeles, Seattle and Vancouver, B. C. The officers of the Norris Company are: President, L. A. Norris; vice-president and treasurer, P. A. Palmer; secretary, William Joyner.

Waterproofing a Gable.

The question is frequently asked, "How can the gable of a house be waterproofed?" The inquiry is answered by the manufacturers of Aquabar as follows: "If it should be a brick wall, clean down, scrape out all joints deep enough to give room for the new plaster. If the gable is of woodwork or

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Reports and Estimates on Properties and Processes

boards, tack on a netting of expanded metal or wire work not more than one inch mesh and secure the same with staples. A coat of Aquabared cement mortar mixture, one to three, one-half to three-quarters thickness, will suffice to make the wall dry. If preferred, a second coat one-quarter of an inch in thickness, mixture one to one, will naturally add to the strength of the job."

Weather-Beaten Tiles.

A tile of clay so made that it resembles old English weather-beaten shingles, is to be used as the roof covering of the Church of St. Matthew, under construction at San Mateo, D. H. Burnham & Co., architects. Upwards of 40,000 of these aged-appearing tile are to be used and the contract to furnish them has been secured by the Los Angeles Pressed Brick Company of Los Angeles. This company has also secured two large pressed brick orders at San Francisco for the Children's Hospital, Bliss & Faville, architects; and for the Olympic Club building, Paff & Bauer, architects. A large order for paving brick has also just been booked from Fresno.

United Material Company Gets Important Agency.

The United Building Material Company, Balboa building, San Francisco, which recently was given the Northern and Central California agency of the Los Angeles Pressed Brick Company's products, is meeting with excellent success in placing this company's goods on the market. A number of fine contracts have been closed, including the face brick for the Olympic Club's new building, designed by Architects Paff & Bauer and illustrated in the January number of The Architect and Engineer, also the new Children's Hospital, designed by Architects Bliss & Faville. The Richmond factory is unusually busy just now turning out red pressed brick. The company operates two other plants in Southern California.

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The Heating Plant and Kitchen Equipment of the Palace Hotel

MUCH has been said and written in praise of the new Palace Hotel, architecturally, but very little space has been given by the newspapers and magazines to describing the domestic features of this great hostelry.

Ordinarily the kitchen and culinary departments are not the most attractive—of course they are a very essential part of modern hotel equipment, for man's happiness and contentment rests largely with the fullness of his stomach—but in the case of the Palace, the kitchen is quite as inviting as the spacious, comfortable lounging court.

That no expense was spared in installing an equipment second to none in the country is evident from the statement of the contractors, Messrs. Mangrum & Otter, who say that they were given practically carte blanc, the total of their contract running to something over $250,000. This, of course, included the heating plant—the vacuum or exhaust system—which requires much less fuel than the ordinary steam heating plant, and all the tiling in the bath rooms.

The kitchen equipment includes a polished steel and tile table, 75 feet long, another table for carving, a battery of ranges with oil burners, the total weight of which is over ten tons—the heaviest set of cooking stoves in the United States. They are equipped with the very latest devices for cooking as well as for keeping the food hot. The hood over the range is made of heavy steel, porcelain enameled, which makes it absolutely sanitary, and presents a very beautiful appearance, being put together with nickel-plated copper bands. It should be stated to the credit of the contractors that much of the equipment was manufactured in San Francisco, including all the plate warmers, toasters, kettles, etc.

In addition to the main kitchen there is a complete auxiliary kitchen in another part of the building to take care of the help, which numbers more than 500 persons.

Pittsburg Boilers.

The Pittsburg Water Heater Company is furnishing water-heaters in some of San Francisco's largest apartment houses, hotels and office buildings. Recent contracts include the installation of 14 heaters in the Sutter Apartments, (one for each apartment,) and a number in both the new Young Women's Christian Association and in the Metropolitan Life Insurance buildings. The company on the first of the year opened a gas appliance business in Oakland, in which the Pittsburg water-heaters will be the principal article. H. Brandjen is the manager of this new store.

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Write or call for descriptive circulars and other data about these beds.

Eclipse Hose Racks for Office and Loft Buildings.

The Goodyear Rubber Company of San Francisco have taken the agency for the Eclipse hose rack, which, when used with the Goodyear special valve (as illustrated herewith) makes the neatest and most durable outfit on the

market. It is specially adapted to fit in wall cabinets and where the space is limited. Will fit in 6-inch space.

The hose is hung on galvanized metal pins which drop instantly when the folds are drawn off, yet remain hanging on the rack ready for immediate use again. The hose will not tangle, as it comes off gradually.

The Goodyear company are also agents for the "Acme" fire extinguisher, noted for its simplicity, reliability and durability. It is always ready, never fails and is harmless and very effective.

Change in Management.

Mr. F. A. Hall, who for the past twelve years has been manager of the chain, block and hoist department of the Yale & Towne Manufacturing Company, whose general offices are at Nos. 9-13 Murray street, New York, and whose works are at Stamford, Conn., has resigned his position in order to accept election as vice-president and treasurer of the Cameron Engineering Company, of Brooklyn, N. Y.

Mr. Hall's successor will be Mr. R. T. Hodgkins, who for several years has been his chief assistant, and who is thoroughly qualified by experience and ability successfully to perform the duties of the position.

In his new connection Mr. Hall expects to make a specialty of trolleys and appliances for overhead handling of materials, and in connection therewith, to make use of the Yale & Towne blocks and hoists, with the sale of which he has so long and prominently been identified.

An Index to the Advertisements

PAGE

Adams & Hollopeter.....100
Ahlbach & Mayer.....105
Amweg, Frederick J.....123
Anderson, G. J.....122
Aquabar Co.....118
Armitage, P. C.....102
Armstrong Cork Co.....152
Art Metal Works.....132

Bagge W H., & Son, Inc...149
Bank Equipment Co.....144
Beall & Co.....144
Beyfuss, C., Co.....160
Bird, J. A. & W. & Co.....17
Bluxome & Co.....111
Boyd & Moore.....129, 131, 156
Brady, C. A.....145
Braun, J. G.....20
Breite, W. W.....123
Bridgeport Wood Finishing Co.....23
Brittain & Co.....24
Brode Iron Works.....28
Building Material Co., The, Inc.....6
Bullard, E. D.....27
Butte Engineering Co.....101

California Art Glass Works. 21
Calif. Bldg. Materials Co...124
Calif. Hyd. Eng. & Sup. Co.104
Calif. Magnesite Co.....124
Calif. Mantel & Tile Co....105
California Nursery Co.....157
Calif. Photo Engraving Co..151
Calif. Valve & Air Brake Co.135
Callaghan & Manetta.....30
Canadian Bank of Commerce.142
Capron, A. J.....150
Carnegie Brick and Pottery. 15
Carrelin Asbestos Flooring..143
Central Electric Co.....106
Charruau, Chas. M.....128
City Plumbing Co.....105
Clarke, D. Ross.....151
Clinton Fireproofing Co.2d cover
Clover Leaf Machine Co....154
Coleman, Alex.....107
Columbia Marble Co.....10
Cook, H. N. Belting Co.....30
Co-Operative Artificial Stone Co.....27
Cooper's Floor Co.....120
Corrugated Bar Co.....26
Crane Company 31
Crowe, F. T. & Co.....140
Crowley, E. D. Co.....111

Dalziel, Robt., Jr. Co.....103
Dean Reversible Window Co. 17
De Laval Dairy Supply Co..122
Denny-Renton Clay & Coal Co. 15
Diamond Brick Co.....34
Dieckmann Hardwood Co.....32
Doak Sheet Steel Co.....128
Dodd's Interlocking Block Co. 155
Duncan & Rehfisch.....151
Dunlevy & Gettle.....149
Dwan, J. E. & Co.....22
Dyer Bros.....11

Eastern Reinforced Cement Tray Co.....143
Electric Railway & Mfg. Sup. Co.....4th cover
Elevator Sup. and Repair Co.129
Engstrum, F. O.....14
Enos Co., The.....104

Enterprise Supply & Mfg. Co. 148
Esterly Construction Co.....122

Fee, Grant.....144
Fish, Ferdinand.....126
Follansbee Bros. Co.....102, 155
Ford & Malott.....13
Foster & Vogt.....146
Fuller, W. P. Co.....127

Gilley-Schmid Co.....107
Glidden Varnish Co.....18
Golden Gate Brick Co...18, 108
Golden Gate Struct. & Orn. Iron Works.....27
Goodyear Rubber Co.....138
Grant Gravel Co.....112
Green, H. B. 29
Greenleaf, George R.....105
Gutlehen Bros.....150

Haines, Jones & Cadbury Co.127
Hanbridge-Loyst Elec. Co.. 8
Hansen & Johnson 149
Hart Heater Co., The.....101
Haslett Warehouse Co.....133
Hipolito Screen & Sash Co. 17
Hock, Charles H.....129
Holmes Disappearing Bed Co.116
Hotel Sacramento.....152
Howard, E. A. & Co..... 5
Howe Scale Co.....143
Hoyt Bros.....151
Hulse Tile Co.....29
Humphrey Co.....21
Hunt, Robt. W. & Co.....113

Inlaid Floor Co.....124
Insley Manufacturing Co...147

Johnson, J. A. M.....122
Johnson, S. T. Co.....124

Kanawha Chem. Engine Co.. 141
Kapp, G. W.....132
Keithley, E. A.....7
Keuffel & Esser Co.....111
Keystone Boiler Works.....147
Knudsen, P. J., Co.....121
Kruse, J. H.....130, 131

Lamson Consolidated Store Serv. Co. 134
Lange & Bergstrom.....125
Larson, Louis J.....149
Latchem Eng. & Elec. Co....103
Lemos Bros. 116
Leona Chemical Co.....142
Lilley & Thorn Co.....31
Lindley Oil Burner.....103
Lithic Mfg. Co.....145
Los Angeles Pressed Brick Co. A. 14
Lynch, A. & Co.....137

Mackenzie Roof Co.....109
Maddern, Henry T.....107
Maher, W. E.....132
Mailing Case Mfg. Co.....22
Mangrum & Otter.....32
Markley, James F.....137
Marshall & Stearns Co.....120
McClintic-Marshall Con. Co., 27
McCormick-Henderson Co...143
McEnerney, C. L.....123
McGowan & Butler.....129
McKay, N. H.....150
McWhirter & Drake.....145
Mechanical Dust Suction Co.110
Meinardus, Elimar E. B....151
Menzer, C. & Son.....21

Metropolis Construction Co.....
Meurer Bros. .....3d cover
Montague, W. W., & Co.... 5
Morrin, Thos.....123
Morrison Electric Co.....149
Mott Iron Works.....150
Moulin, Gabriel 22
Munich Art Glass Co.....135
Municipal Eng. & Con. Co...112
Musto Sons-Keenan Co..... 11

National Furnace Co.....125
National Lynwood Co..3d cover
Neece, The Geo. F.....150
Nelson, N. O., Mfg. Co..... 31
Northwest Bridge Works...148

Olympic Roofing Co.....114
O'Mara, J. E.....105
O'Rourk, T. F. 27
Oregon R. & Nav. Co....139
Ostrowski, Frank S., & Son.145

Pacific Coast Asbestos.....151
Pacific Laboratories.....150
Pacific Photo and Art Co....138
Pacific Rolling Mills.....28
Pacific Surety Co.....151
Pacific Tank Co.....135
Paraffine Paint Co.....114
Parrott & Co. 3
Parker-Preston & Co., Inc.. 19
Peerless Mfg. Co.....122
Petersen, H. L.....125
Peterson, Nelson & Co.....149
Petersen, P.....137
Pfister & Co.....110
Pioneer Roll Paper Co.....28
Plaster Block Co.....118
Port Costa Brick Works.... 14
Priddle, A. .....2d cover
Pure Clay Brick and Tile Co. 16
Pyrmont Brick Co..... 24

Ralston Iron Works, Inc.... 27
Ransome Concrete Co..... 8
Reardon Crist Const. Co....137
Reinforced Concrete Pipe Co.136
Reliance Ball-Bearing Door Hanger 147
Rickon-Ehrhart 31
Rischmuller, G.....144
Roebling Construction Co....109
Ruud Manufacturing Co.... 23
Russell & Erwin Mfg. Co.... 2

Samuel, H. D., Co.....122
Samson Cordage Works.....137
Santa Fe Lumber Co.....146
Sartorius Co. 29
Schastey & Vollmer 150
Self-Cleaning Filter Co.....115
S. F. Art Glass Works.....113
S. F. Comp. Air Cleaning .. 27
S. F. Metal Stamping and Corrugating Co. 22
Silva Heating & Plumb. Co.106
Simonds Machinery Co.....137
Sing Fat Co. 149
Smith, Emery & Co.....113
Southern Pacific 153
Spencer Desk Co.....144
Standard Construction Co...137
Standard Engineering Co....149
Standard Portland Cement Corporation 160
Standard Supply Company..149
Standard Varnish Works...133
Stanley Works 133
Steiger & Kerr Stove & Foundry Co.....143
Strable Mfg. Co.....131

[Index continued on Page 120.]

Good Plumbing.

One of the new buildings in Oakland that is attracting considerable attention and which bids fair to be popular with professional men is the I. E. Thayer office structure at the corner of Fourteenth and Jefferson streets designed by Architects McCall and Wythe. It is five stories and basement, class C, the brick walls having an attractive exterior coating of white Portland cement. There are ninety-eight offices and five stores, one of which is to be the new home of the Oakland Women's exchange.

The building is equipped with a splendid heating system installed by Henry T. Maddern, the well-known Oakland plumber. There are 125 radiators distributed over the building, each office as well as all the halls and corridors having an even supply of heat that insures comfort at all times. Besides installing the heating system Mr. Maddern put in all the plumbing fixtures and piped the entire building for hot and cold water and compressed air, conveniences which make the building a valuable one for dentists and physicians. Mr. Maddern has received many compliments for his high class work in this building. His contract figured close to $10,000.

Another notable heating installation by Mr. Maddern was the steam heating system in the Vue Du Lac apartment house of Charles McGregor. The building contains 72 apartments, all of which are well supplied with heat. The palatial home of Former Secretary Victor Metcalf has been equipped with a hot water furnace by Mr. Maddern, who also did the plumbing in the same house, his total contract amounting to something like $3,000. The architect of the Metcalf house is Walter Matthews.

Drifting Back to Greek Architecture.

That the people of America are drifting away from the Gothic style of architecture, originated by the Teutonic race, back to the Greek styles was the statement made by Prof. E. B. Clapp, head of the Greek department in the University of California, who lectured recently in the college town.

"Of the sculptors known," said Clapp, "Phidias and his Greek contemporaries were by far the greatest, Michael Angelo and the artists of the Italian school being as children beside them. The Greek styles of sculpture and architecture, with simple lines, are fast coming again into public approval, the handsome buildings of today being constructed on simple and artistic lines rather than with ornate decorations of the Teutonic period, such as have been used in the past.

"The buildings of the new San Francisco are simple and beautiful."

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Boyd & Moore Take Hydrex Agency.

Messrs. Boyd & Moore, 356 Market street, San Francisco, have added another department to their constantly growing building material business. They have been fortunate in securing the California agency for the well-known water proofing compound, "Hydrex," and a number of big contracts have recently been completed, including the damp proofing of the deep basement of the White Investment building at California and Battery streets, Louis P. Hobart, architect. The department is in charge of Mr. W. J. Fogarty, who has had long experience in water proofing work. The following is a partial list of some of the more important buildings in San Francisco that have been treated with Hydrex:

Palace Hotel, St. Claire building, Postal Telegraph building, Luning building, Phelan office building and Monadnock building. The Hydrex Company supplies all the water proofing compound for the buildings of the Pennsylvania Railroad, Erie, New York Central and Hudson Railroad; the New York, New Haven and Hartford Railroad, and the Delaware, Lackawanna and Western Railroad.

New Catalogue on Water Heaters.

The Humphrey Company, makers of automatic water heaters, have just issued a new catalogue which is a little out of the ordinary. Besides being a gem of typographical art it contains a fund of interesting data about automatic water heaters—the Humphrey in particular.

It shows the entire line of Humphrey gas water heaters, meaning Humphrey instantaneous bath-room water heaters, Humphrey automatic water heaters and Humphrey circulating copper coil water heaters for attachment to the kitchen boiler. The book is devoted more extensively to automatic water heaters than the others.

A copy will be mailed free upon application.

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ADVERTISERS' INDEX—Continued from Page 117

Sturgeon & White.....145
Sutton, John G., Co..... 8

Tay, George H.....127
Taylor & Johnson..... 9
Taylor & Stanton.....151
Tomasello, S. & Co.....128
Tozer Company 24
Trussed Concrete Steel Co...119
Tucker, W. W.....146

Union Fibre Co..... 19
United Glass Works..... 12
United Materials Co., 2d cover

Valente & Leveroni.....145
Vacuum Eng. Co..... 20
Van Emon Elevator Co..... 1
Vermont Marble Co..... 10
Vulcan Iron Works..... 28

Wadsworth, Howland & Co..139
Wagner, Fred W.....150
Warren Construction Co....134
Waterhouse & Price Co...3d cover
Waters & Co.....142
Watson Roof Co., The..... 4
Weary & Alford Co..... 32
Weber, C. F., & Co.....146
Wellington, Geo. J. 144
Wells & Spencer Machine Co.119
Western Building Material Co. ..... 4th cover
Western Builders' Sup. Co. 25
Western Iron Works..... 29
White Bros.....109
Williams & Carter Co..... 30
Wilson, W. H., & Co.....137
Woods & Huddart..... 32
Wood, John, Mfg. Co.....121
Wood Waste Distilleries Co..142

Yager Sheet Metal Works..145

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Installed Many Fixtures in 1909.

One of the most attractive stores in Berkeley is the lighting fixture establishment of George R. Greenleaf at 2134 University avenue. This store was first established at 2107-2111 Addison street, next to the "Berkeley Independent" office in May, 1908.

Mr. Greenleaf is well known in Berkeley, having lived there for the last seventeen years. In moving from the Addison street location to the new store on University avenue, Mr. Greenleaf was enabled to enlarge both his sales rooms and his shop facilities. Every order receives careful consideration, whether it be for fully equipping a large building or for making a small fixture repair.

During the past year this firm installed the lighting fixtures in the Polytechnic High School, the superintendent of schools' office, the Mason-McDuffie building, the Washington school, the South Berkeley post office, St. John's Presbyterian school, the Emerson school, Unity Hall, the College Avenue Methodist Episcopal church, the Kappa Alpha Theta Sorority, the Beta Theta Pi Fraternity, the Morrell building, Marshall Steele's, St. James' church in Centerville, and the University of California Infirmary, in addition to private residences and flats in all sections of the city.

Big Crushing Plant in Operation.

The new crushing plant recently installed at Niles by the California Building Material Company, Pacific building, San Francisco, is now in full operation.

This plant is one of the most complete of its size in the State. The rock is the equal, if not the superior, of anything on the market in Central and Northern California. The company is marketing three sizes, namely, ⅛" to ⅜", ¼" to 1", and 1" to 1½" and 2". The rock is all washed before being crushed and contains absolutely no loam.

The company has already marketed considerable of this crushed rock and contractors say it is the best they have seen.

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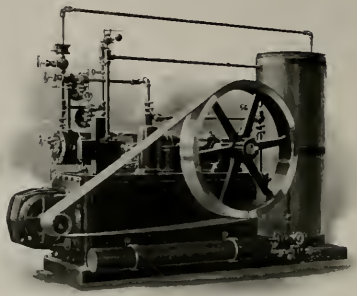

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High-Class Lighting Fixtures.

Adams & Hollopeter, of San Francisco, makers of high-grade lighting fixtures, installed the handsome fixtures in the new Hotel Sacramento, illustrated in this number of The Architect and Engineer. They were designed especially for the hotel and are the work of an artist. That this firm is getting its share of the better class of trade, one need only glance at the list of some of its recent contracts to be convinced. Here they are:

Anglo and London Paris National Bank, Sutter and Sansome streets; New Orpheum Theater, O'Farrell street above Stockton; Union League Club, Powell and O'Farrell streets; City of Paris, Geary and Stockton streets; Andrews' Diamond Palace, Kearny street near Market; Casa Madrona Apartments, Frederick street near Ashbury; Apartments for Mrs. Laura Hirshfeld, Washington street near Laurel; Apartments for Miss Katherine Kavanagh, Jackson street near Octavia; Apartments for Mrs. A. M. Hewitt, Lombard and Larkin streets; Apartments for Mr. George H. Fuller, Sixth avenue and Lake street; Apartments for Mr. S. E. Davis, Sacramento street near Polk; residences for the following: Mrs. H. Kugeler, Washington street near Locust; Mrs. E. Chabot, Oakland; Mr. Joseph Martin, 2514 Fillmore street; Mrs. E. Clemens Horst, Presidio terrace; Mr. Elmer E. Smith, Merced; Mr. R. E. Cranston, Sacramento; Mr. John M. Perry, Stockton; Mr. John Lee, Palo Alto; Mr. Samuel B. Welch, Berkeley; Mrs. Bruce Cornwall, Berkeley; Mr. Wm. Woodhead, Hyde street near Greenwich; Mr. A. J. Rich, Van Ness avenue near Pacific; Mrs. E. N. Fritz, Ashbury heights; Mr. Lewis E. Aubrey, Easton.

Death of Charles H. Preston.

The architectural profession and trade will be sorry to learn of the death at Norwich, Conn., of Mr. Charles H. Preston, secretary and treasurer of the well-known manufacturers of waterproof and odorless art in shingle stains, Parker, Preston & Co., Inc. This firm has recently established branch offices in Los Angeles and San Francisco and is meeting with success in the sale of its goods on the Pacific Coast. Of his late partner, Mr. Richard S. Parker, president and general manager of the Parker-Preston Company, pays the following splendid tribute:

"Mr. C. H. Preston was one of the most delightful and congenial men that ever lived, and the writer misses his business associate very much. He was the soul of honor in all of his transactions and we can ill afford to lose men of this type."

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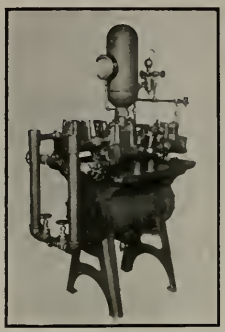

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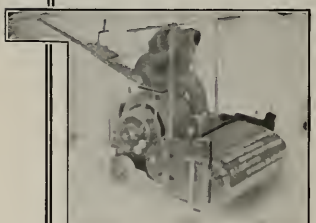

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FAN SYSTEMS A SPECIALTY

The Hardware in the Hotel Sacramento.

All the hardware in the new Hotel Sacramento, illustrated in this number of the Architect and Engineer, was furnished by the Russell and Erwin Manufacturing Company of New Britain, Conn., with Pacific Coast offices in the Commercial building, San Francisco. A high grade trim was used throughout the big hostelry and many favorable comments have been heard from guests and others who have visited the hotel.

A notable feature of the hardware installation is the system of indicator locks that has been introduced. Indicating locks are of comparatively recent invention, Russell and Erwin being the first big hardware house to introduce them on the Pacific Coast. That they are becoming popular is evident by the number of architects specifying them nowadays.

Among the points in favor of the indicating locks is the fact that they enable the hotel employes to tell when a room is occupied without waking or disturbing the guest. The lock differs from the ordinary lock in that it is fitted with a push button opposite the inside key hole and when the key is inserted the lock becomes rigid which is evidence that the room is occupied. The closet doors are subject to the same key as the corridor doors, so that the guest always has the key

to the closet as well as to the room. The closet doors, however, are not subject to the floor keys in the hands of the maids, housekeeper, etc., which consequently gives the guest exclusive control of the closet except for a single emergency key controlled by the management and which will open both corridor and closet doors, even though the latter may be locked with the key on the inside. The management is thus given absolute control in case of death or emergency.

Small Refrigeration Plants.

The installation of small refrigeration plants in hôtels, restaurants, apartments houses and even private residences has become so general that it no longer occasions any surprise, except, possibly, among those of the general public who have never seen any equipment of this description. The first types put on the market were crude in the extreme, and while there have been many improvements in recent years, it is a fact that, even yet, some of the refrigeration equipment to be seen, has no excuse for existence.

The tendency on the part of reliable manufacturers has been to see how good a machine could be built for the money, rather than how cheaply it might be constructed. In response to a growing demand for small, compact, and withal, efficient and durable refrigeration outfits, some manufacturers have long striven to supply such demand, but not until the introduction of the Wizard Self-contained Refrigerating Machine, was the desired object accomplished. To be sure, there has at times been on the market various so-called "automatic" "self-regulating" "engineerless" "warranted-fool-proof" contraptions, but they were like mushrooms—here today and gone tomorrow.

The Wizard Self-contained Refrigerating machine is built on merit, sold on merit and run on merit. It is made in three sizes, 1½ tons, 2¼ tons and 4 tons refrigerating capacity per twenty-four hours. The unique feature about the Wizard is that the compressor, oil trap, ammonia condenser and liquid receiver are all on one base, and all connections are made before it leaves the factory. But two ammonia and two water connections need be made to install the machine. This, of course, does not include the expansion piping in the rooms or boxes to be cooled.

The outfit is complete with air purge valve, charging valve, ammonia gauges with valves, scale tran on suction line, and every appurtenance found on larger compression systems.

Elsewhere, in this issue, will be found an illustration of the Wizard, which is sold throughout the Pacific states by the De Laval Dairy Supply Company of San Francisco and Seattle.

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Issue Annual Stock List.

White Bros., the hardwood lumber dealers, have published their annual stock list, showing, according to their figures, the largest stock of general hardwoods west of Chicago. The company claims to carry everything there is in hardwood and in addition to importing from the Mississippi valley all the American hardwoods, they maintain a sawmill at Petaluma, where is manufactured into lumber the various woods grown on the west coast of Mexico and Central America, such as mahogany, Spanish cedar, Jenisero and Primavera. In addition to these woods the firm imports oak logs from Japan.

Should have used Photographs.

The Year Book of the San Francisco Architectural Club, issued in connection with the Fifth Exhibition and under the direction of the Architectural League of the Pacific Coast, is of more than ordinary merit and interest. The illustrations of work which is being done by the leading men of the Coast is especially attractive and well worth studying. If we may venture a suggestion, it is that the illustrations would have had greater interest had more of them been from photographs of the buildings themselves rather than drawings.—Brick-Builder.

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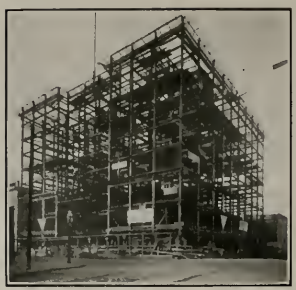

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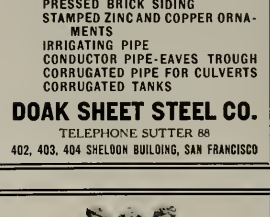

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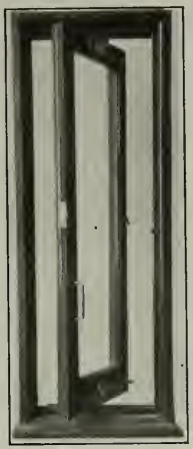

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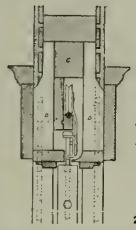

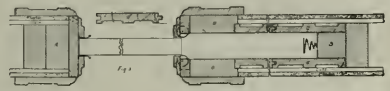

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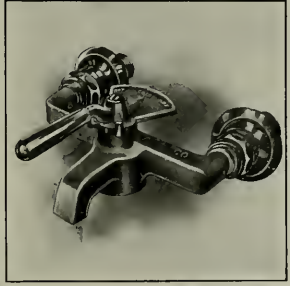

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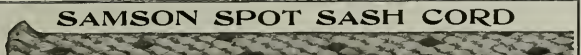

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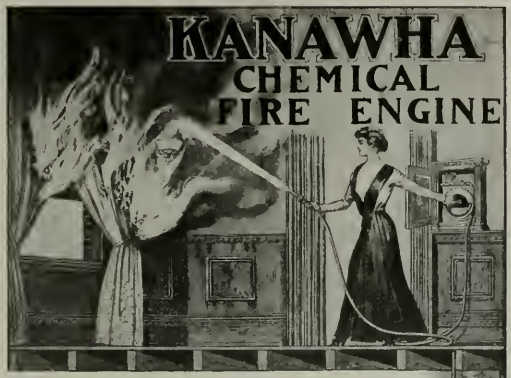

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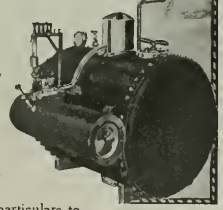

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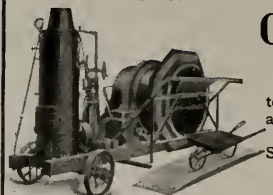

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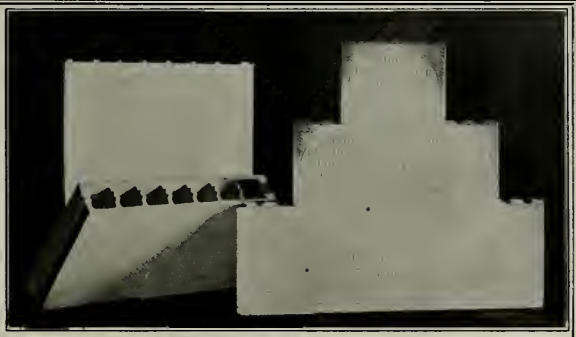

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It is with pleasure that I have to notify you that at the meeting of the Executive Committee January 17, 1910, they voted San Francisco as the place for holding the next convention of the American Institute of Architects, the last convention having already voted that it should be held on the Pacific Coast, leaving it to the Board to decide the town.

The date for the meeting has not yet been fixed, we wish to have your opinion as to the best time of the year for this purpose, and as soon as the Board determines upon the date I will notify you and also send you the names of the Committee of Arrangements who will act in connection with a committee from the San Francisco Chapter as to the various arrangements for the convention.

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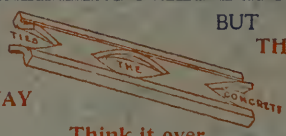

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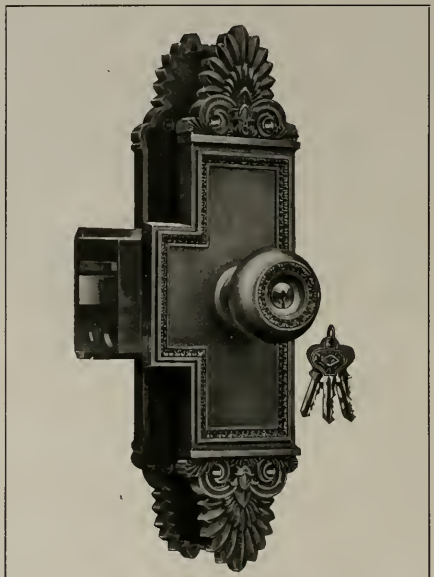

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Ceresit is not an Experiment but has been used to Waterproof hundreds of Foundations, Dams, Tanks, etc.

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SEATTLE TACOMA SPOKANE

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FLOORING

For all Buildings that are to be used for Industrial purposes — Warehouses, Factories, Laundries, Stables, etc., and for Basements, Sidewalks and Roof Gardens.

For Rough Use.

It **Lives** under the racking wear of horses' hoof and truck wheel, the shocks of falling kegs, moving cases and wire-reels.

Hard — yet just elastic enough to **absorb** bumps and knocks. **Tough, "springy"** material is properly blended with **hard** material in scientific proportions.

"Watsonite" **cannot** crack, chip or grind-up.

Waterproof.

No **pores** — no **capillary canals.** There's a perfect waterproof ingredient used that binds the flooring together and holds it **forever impervious.**

There can be no disintegration and **no absorbtion,** ever.

Chemical-proof—It Lasts, Even in Stables.

Uric acid or ammonia **cannot** affect **carbon.** It's the pure carbon ingredient worked scientifically into a tough, plastic form and correctly combined, that makes "Watsonite" impervious to **all** acids and alkalies.

No Other Flooring Like It

either in materials or behavior.

Materials Used.

First, a perfect, unchanging waterproof, acidproof material, — Second, a hard, indestructible material — and Third, an elastic, tough, "springy" material.

All are united in exactly the right proportions by a scientific process of mixing and cooking. It has taken years to perfect this method.

The result is **perfect wear-resistance.**

How Applied.

Spread by hand while still hot and plastic.

Usually but **one inch in thickness** even for hardest usage, and will lay directly over any other kind of floor, old or new.

Full data tells all about it. It saves money for your Clients by reducing maintenance expense and facilitating business operations

Send for Data and Specifications

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That for $30.00 you can panel your new dining room in beautiful crotch mahogany or in real quartered oak, by our new process? Beautiful hardwood trim within the reach of all.

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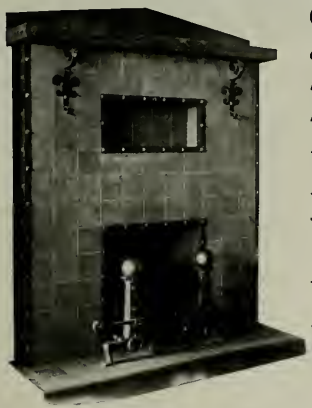

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EXTERIOR OF

Medusa White Portland Cement

HIGH-TESTING STAINLESS

AGENTS

The Building Material Company, Inc.

Monadnock Building, San Francisco

ARCHITECTS' SPECIFICATION INDEX

(For Index to Advertisements, see page 117)

ACETYLENE PLANTS
E. D. Bullard.....268 Market St., S. F.

ARCHITECTURAL AND ORNAMENTAL STEEL AND IRON WORK
Golden Gate Structural & Ornamental Iron Works.....1435 Mission St., S. F.
Vulcan Iron Works...604 Mission St., S. F.
Western Iron Works....125 Beale St., S. F.
Pacific Rolling Mills,
17th and Mississippi Sts., S. F.
Northwest Bridge Works.....Portland, Or.
Dyer Bros.....17th and Kansas Sts., S. F.
Ralston Iron Works,
20th and Indiana Sts., S. F.

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S. Tomasello & Co.,
122 Tentb St., near Mission, San Francisco
Callaghan & Manetta.....344 10th St., S. F.
C. Menzer & Son.....862 Howard St., S. F.

ARTIFICIAL STONE, SCAGLIOLA, ETC.
C. Menzer & Son.....862 Howard St., S. F.

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Pacific Coast Asbestos Co.,
210 Columbia St., Portland
Western Magnesia Asbestos Co.,
Balboa Building, S. F.

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P. J. Knudsen Company, Pacific Coast Agents,
310 California St., S. F.

AUTOMATIC FREIGHT ELEVATOR DOORS
Boyd & Moore.....356 Market St., S. F.

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Bank Equipment Co..Monadnock Bldg., S. F.
J A. M. Johnson.....Monadnock Bldg., S. F.
Weary & Alford Co.,
303 Union Trust Bld., S. F.

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Weary & Alford Co.,
303 Union Trust Bldg., S. F.

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Keyt's Sanitary Basin Plug Co.,
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H. N. Cook Belting Co.,
Fremont and Howard Sts., S. F.
Goodyear Rubber Co....587 Market St., S. F.

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Swedish Venetian Blind Co., Williams & Carter, Pac. Coast Agents,
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Keystone Boiler Works,
Main and Folsom Sts., S. F.
Simonds Machinery Co., 12 Natoma St., S. F.

BRICK AND CEMENT COATING
Wadsworth, Howland & Co., Inc. (See Adv. for Pacific Coast Agents.)

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Clunie Bldg., Monty'y and Calif. Sts., S. F.
Los Angeles Pressed Brick Co.,
Frost Bldg., Los Angeles
Pyrmont Brick Co.....Lincoln, Cal.
Boyd & Moore.....356 Market St., S. F.

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Chas. H. Hoek....910B Devisadero St., S. F.
McWhirter & Drake, Builders' Exch., S. F.

BRICK, PORCELAIN & ENAMEL
Sayre & Fisher Co.—Boyd & Moore, Agents
356 Market St., S. F.

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Insley Mfg. Co., represented by Williams & Carter Co.....197 Jessie St., S. F.

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Redding Hardware sold by Brittain & Co., San Francisco
Russell & Erwin Mfg. Co.,
Commercial Bldg., S. F.

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Ainsworth Bldg., Portland, Ore.
Waterhouse & Price.....59 Third St., S. F.
Lilley & Thurston.....82 Second St., S. F.

CAPITALS, MOLDINGS, ETC.
Western Builders' Supply Co.,
680 Mission St., S. F.

CASTINGS
Pacific Rolling Mill Company,
17th and Mississippi Sts., S. F.
Steiger & Kerr Co., Folsom and 18th Sts., S. F.

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Standard Supply Co.,
First St. and Broadway, Oakland
Pacific Portland Cement Co.,
Pacific Bldg., S. F.
Western Building Material Co.,
430 California St., S. F.
The Building Material Co., "White Portland,"
587 Monadnock Bldg., S. F.
Boyd & Moore.....356 Market St., S. F.
Lilley & Thurston.....82 Second St., S. F.

CEMENT, CONCRETE, BRICK AND PLASTER BLOCKS
Makowski Plaster Block Co.,
Macdonough Bldg., S. F.
C. Menzer & Son.....862 Howard St., S. F.
Dodds' Interlocking Block Company,
24 California St., S. F.

CEMENT AND PLASTER CONTRACTORS
Callaghan & Manetta...344 Tenth St., S. F.
D. Ross Clarke.....708 Pacific Bldg., S. F.
C. Menzer & Son.....862 Howard St., S. F.

CEMENT EXTERIOR WATERPROOF COATING
Protectorine, Black, White and Colorless, Boyd & Moore.....356 Market St., S. F
Weatherproof Coating. Made by Parker, Preston & Co., Inc. Pacific Coast Branches, Monadnock Bldg., S. F., and Central Bldg., Los Angeles.
Bay State Brick and Cement Coating made by Wadsworth, Howland & Co. (See distributing agents on page 139)

CEMENT TESTS
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425 Washington St., S. F.
Pacific Laboratories, Inc.,
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Smith, Emery & Co., 651 Howard St., S. F.

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SOUTH BEND, IND.

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ARCHITECTS' SPECIFICATION INDEX—*Continued*

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Medusa White Portland Cement, California Agents, The Building Material Co., Inc.....587 Monadnock Bldg., S. F.
"La Farge" sold by Waterhouse & Price, 59 Third St., S. F.
"Vitrolite" Cold Water Paint, sold by Boyd & Moore.....356 Market St., S. F.
Bay State Brick and Cement Coating, made by Wadsworth, Howland & Co. [See list of distributing agents on page 139]

CEMENT FLOOR COATING

Adamant Cement Floor Coating. Made by Parker, Preston & Co., Inc. Pacific Coast Branches, Monadnock Bldg., S. F., and Central Bldg., Los Angeles.
Bay State Brick and Cement Coating, made by Wadsworth, Howland & Co. [See list of distributing agents on page 139]

CHEMICAL ENGINEERS

Robert W. Hunt & Co., 425 Washington St., S. F.
Pacific Laboratories, Inc., 558 Market St., S. F.
Smith, Emery & Co., 651 Howard St., S. F.

CHEMICAL ENGINES

Kanawha Chemical Engine Co., Charlstown, W. Va.

CHIMNEY BUILDERS

Dunlevy & Gettle....79 City Hall Ave., S. F.
Dresser, McDonnell & Co., 39-49 Isis St., S. F.

CHURCH FURNITURE

Spencer Desk Co....Monadnock Bldg., S. F.
C. F. Weber & Co.....365 Market St., S. F.

CLOCKS—SELF-WINDING

Ferdinand Fish, 250 Montgomery St., S. F.

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Union Fibre Co., manufacturers of Waterproof Lith, Union Corkboard, Linofelt, Coast Agency, 710 Pacific Bldg, S. F.

CONCRETE CONSTRUCTION

Bluxome & Co.....5 Front St., S. F.
Foster & Vogt, Builders Exchange, 180 Jessie St., S. F.
A. Lynch & Co., 314 Builders' Exchange Bldg., S. F.

CONCRETE MIXERS

Beall & Co., Portland, Or., Agents Chicago Concrete Mixer
Coltrin Concrete Mixers, N. J. Morehouse, Western Agent, Waterloo, Iowa; J. L. Mery Eng. Co., Monadnock Bldg., S. F.; V. W. Mason, St. Johns, Oregon.
F. T. Crowe & Co., Seattle, Tacoma, Spokane and Portland
Chicago Improved Cube Mixer,
Pacific Coast Offices, 789 Folsom St., S. F., and F. T. Crowe & Co., Portland and Seattle.
Lilley & Thurston.....82 Second St., S. F.
Clover Leaf Machine Co., South Bend, Indiana

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Reinforced Concrete Pipe Company, 716 Central Bldg., L. A. Monadnock Bldg., S. F.

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Corrugated Bars sold by John B. Leonard, C. E. Sheldon Bldg., S. F.
Lilley & Tburston Co....82 Second St., S. F.
International Fabric & Cable, represented by Western Builders' Supply Co., 680 Mission St., S. F.
Artbur Priddle.....133 Geary St., S. F.
Twisted Bars sold by Woods & Huddart....356 Market St., S. F.
Northwest Bridge Works.....Portland, Ore.

CONCRETE SURFACING

"Concreta" sold by W. P. Fuller & Co., S. F.
"Glidden Liquid Cement," sold by Glidden Varnish Company, Cleveland, O.
"Alkacene" Liquid Concrete—Boyd & Moore, 356 Market St., S. F.

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W. H. Bagge & Son, Inc., 3528 Sacramento St., S. F.
Esterley Construction Co.....Berkeley, Cal.
Lange & Bergstrom, Monadnock Bldg., S. F.
Metropolis Construction Co., 34 California St., S. F.
F. O. Engstrum Co., Los Angeles and San Jose, Cal.
Hoyt Bros., Builders' Exchange, S. F., and Santa Rosa
P. Peterson.....Fruitvale, Cal.
Louis J. Larson....1231 Chestnut St., Oakland
Ransome Concrete Co....Crocker Bldg., S. F.
Northwest Bridge Works, Fifteenth and Front Sts., Portland
Redmond, De Luca & Barzellotti, 268 Montgomery St., S. F.
Gutleben Bros..944 Monadnock Bldg., S. F.
Rickon-Ehrhart Eng. & Const. Co., 1859 Geary St., S. F.

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Armstrong Cork Co....693 Mission St., S. F.

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Boyd & Moore.....356 Market St., S. F.
Parker Corner Metal Bead sold by J. W. Richards.....Metropolis Bank Bldg., S. F.
"Prescott" sold by Boyd & Moore, 356 Market St., S. F.

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Boyd & Moore.....356 Market St., S. F.
"Pabco" Damp Proofing Compound sold by Paraffine Paint Co....38 First St., S. F.
H. D. Samuel Company, 23 Valencia St., S. F.
"Protectorine," Compound, sold by Boyd & Moore .....356 Market St., S. F.
Parrott & Co., agents for Genasco Positive Seal Damp Proof Paint.

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G. Rischmuller.....Builders' Ex., S. F. and 842 37th St., S. F.

DOOR HANGERS

Pitcher Door Hanger sold by Pacific Tank Co.....318 Market St., S. F.
Reliance Hangers.....(see page 147)

DOORS—METAL

Waterhouse & Price.....59 Third St., S. F.
"Cross" Fireproof Horizontal Folding Doors, Boyd & Moore.....356 Market St., S. F.

DOORS—REVOLVING

"Van Kannel" Revolving Doors, Boyd & Moore.....356 Market St., S. F.

DOORS—VENEER

Northwest Door Co., Albina Ave., Portland

H. T. Johnson Chas. L. Taylor
Phone Kearny 4039
TAYLOR & JOHNSON
BUILDING CONSTRUCTION
713 Postal Telegraph Bldg.
San Francisco, Cal.

ARCHITECTS' SPECIFICATION INDEX—*Continued*

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Boyd & Moore.....356 Market St., S. F.

ELECTRICAL CONTRACTORS
Central Electric Co..185 Stevenson St., S. F.
Hanbridge-Loyst Electric Co.,
77 Sutter St., S. F.
Butte Engineering Co..683 Howard St., S. F.
Jno. G. Sutton Co.....229 Minna St., S. F

ELEVATORS
Van Emon Elevator Co., 54 Natoma St., S. F.
Wells & Spencer Machine Co.,
139 Beale St., S. F.

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Cleveland Art Metal Co.,
Boyd & Moore, Agents, 356 Market St., S. F.

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Elevator Supply & Repair Co.,
593 Market St., S. F.

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John B. Leonard.....Sheldon Bldg., S. F.
W. W. Breite.....Clunie Bldg., S. F.
F. J. Amweg, C. E., 700 Marston Bldg., S. F.
Chas. M. Charrman, Contracting Engineer,
Humboldt Bank Bldg., S. F.
Lathrop & Hill.....1305 Call Bldg., S. F.

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Elevator Supply & Repair Co.,
593 Market St., S. F.

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527 California St., S. F.

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Goodyear Rubber Company,
587-589 Market St., S. F.

FIREPROOF PARTITIONS
Dodds' Interlocking Block Co.,
24 California St., S. F.

FIREPROOFING
Roebling Const'n Co..Crocker Bldg., S. F.

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United Glass Co.....115 Turk St., S. F.
Munich Art Glass Company, Inc.,
667 Mission St., S. F.

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Pacific Bldg., S. F.
Leona Chemical Co..1256 Broadway, Oakland
Grant Gravel Co.....87 Third St., S. F.

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Inlaid Floor Co.....398 Eddy St., S. F.
Boyd & Moore.....356 Market St., S. F.

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Dieckmann Hardwood Co., Welch Bldg., S. F.
E. A. Howard Co.....20 Howard St., S. F.
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First St., bet. Washington & Clay, Oakland
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Reno Hard Wall Plaster, sold by Western Building Material Co.,
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Adamant Co.....Worcester Bldg., Portland
Empire Hard Wall Plaster Co.,
Pacific Bldg., S. F.

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Ruud Manf'g Co., 428 Sutter St., S. F.; 651 S. Hill St., L. A.; 294 Yamhill St., Portland, Ore.
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Humphrey Co.,
565 N. Rose St., Kalamazoo, Mich.
Pittsburg Water Heater sold by
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The Lindley Oil Burner, represented by Long & Long.....724 San Pablo Ave., Oakland
Machinery and Electrical Co.,
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Silva Heating & Plumbing Co.,
140 First St., S. F.
Solar Heater Co.,
333 New High St., Los Angeles
Mangrum & Otter, Inc., 507 Mission St., S. F.
Gilley-Schmid Co., Inc.,
Thirteenth and Mission Sts., S. F.
Jno. G. Sutton Co.....229 Minna St., S. F.
John Wood Mfg. Co.,
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Pacific Blower & Heating Co.,
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IMITATION STONE
C. Menzer & Son.....862 Howard St., S. F.
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Robert W. Hunt & Co., 425 Washington St., S. F.
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Smith, Emery & Co., Inc., 651 Howard St., S. F.
INSURANCE
Voss, Conrad & Co..Modnadnock Bldg., S. F.
INTERIOR DECORATING
L. Tozer & Son Co., 228 Grant Ave., S. F.
C. E. Gordon.....1235 Pierce St., S. F.
Schastey & Vollmer..1930 Van Ness Ave., S. F.
W. W. Tucker, Fourteenth and Webster Sts., Oakland
Pfister & Co.....169 Grove St., S. F.
INSULATION
Union Fibre Co., Winona, Minn.; Coast Agency.....710 Pacific Building, S. F.
JOIST HANGERS
Western Builders' Supply Co., 680 Mission St., S. F.
LAUNDRY TRAYS
Eastern Reinforced Tray Co., Eighteenth and Clementina Sts., S. F.
LIME
Standard Supply Co., Oakland
First St. and Broadway, Oakland
LIGHTING FIXTURES
Century Electric Company, 1375 Broadway, Oakland
Geo. R. Greenleaf, 2107 Addison St., Berkeley
The Enos Company..1748 California St., S. F.
Adams & Hollopeter....745 Mission St., S. F.
J. F. Kelly Company, 723 7th St., Oakland, Cal.
LOCKERS—METAL
Boyd & Moore.....356 Market St., S. F.
LUMBER
Santa Fe Lumber Co. Seventeenth and De Haro Sts., S. F.
MACHINERY AND MACHINERY SUPPLIES
Machinery and Electrical Co., 351 N. Main St., Los Angeles
Steiger & Kerr Stove & Foundry Co., Folsom and 18th Sts., S. F.
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California Magnesite Co., Slauson Ave., Los Angeles
MAILING CASES
Mailing Case Mfg. Co., 264 Natoma St., S. F.
MANTELS
Mangrum & Otter.....561 Mission St., S. F.
W. W. Montague & Co., 557 Market St., S. F.
MARBLE
Joseph Musto Sons—Keenan Co., 535-565 North Point St., S. F.
Italian & American Marble Works, Sixteenth and Carolina Sts., S. F.
Columbia Marble Co., 268 Market St., S. F.
MASONS.
T. F. O'Rourk.....180 Jessie St., S. F.
Ferdinand Wagner.....609 Waller St., S. F.
MATTING RUBBER AND TILING RUBBER
Goodyear Rubber Company,
MECHANICAL ENGINEER
Thomas Morrin.....Balboa Bldg., S. F.
METAL AND STEEL LATH
"All United Steel Studding."
Lilley & Thurston Co..82 Second St., S. F.
METAL CEILINGS
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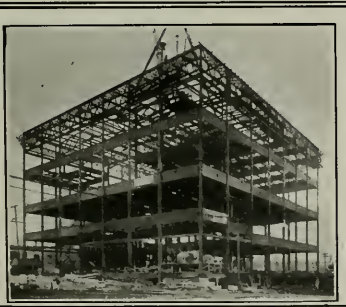
Doak Sheet Steel Co....Sheldon Bldg., S. F.
METAL DOORS AND WINDOWS
Waterhouse & Price.....59 Third St., S. F.



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O'Brien & Werner, Architects

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San Francisco Metal Stamping & Corrugating Co....Treat Ave. and 19th St., S. F.
Doak Sheet Steel Co....Sheldon Bldg., S. F.

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S. T. Johnson Co., 1334 Mission St., S. F.
The Lindley Oil Burner, represented by Long & Long.....724 San Pablo Ave., Oakland

OPERA CHAIRS
Spencer Desk Co....Monadnock Bldg., S. F.
C. F. Weber & Co., 365 Market St., S. F.

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Western Builders' Supply Co., 680 Mission St., S. F.

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Vulcan Iron Works....604 Mission St., S. F.
Cbr. Deterding.....67 Clementina St., S. F.
Western Builders' Supply Co., Representing The L. Schreiber & Sons Co., Cincinnati
J. G. Braun.....Chicago and New York
Sartorius Co., Inc..16th and Utah Sts., S. F.

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Vitrolite Cold Water Paint, sold by Boyd & Moore.....356 Market St., S. F.
Bay State Brick and Cement Coating—Made by Wadsworth, Howland & Co. (Inc.). See adv. in this issue for Pacific Coast agents.
Adamant Cement, Brick and Plaster Coating. Made by Parker, Preston & Co., Inc.

PAINTS, OILS, VARNISHES, ETC.
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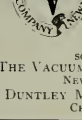

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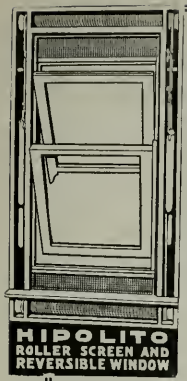

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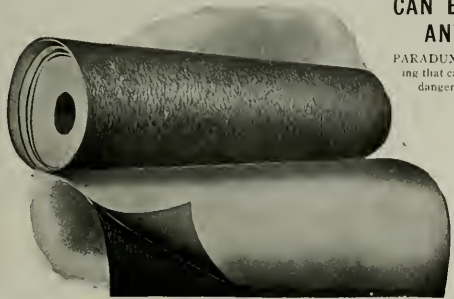

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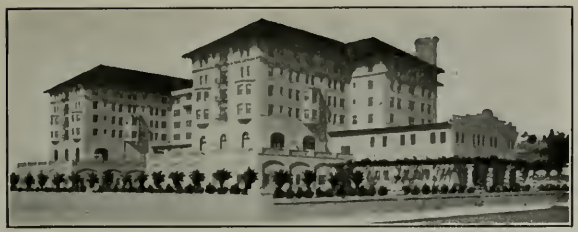

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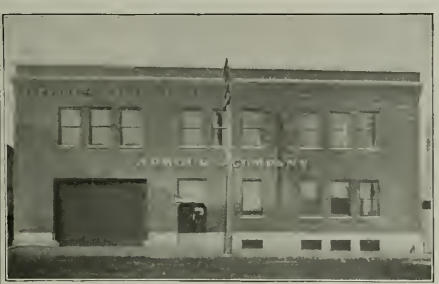

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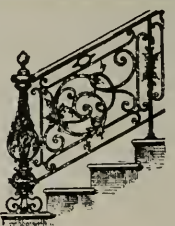

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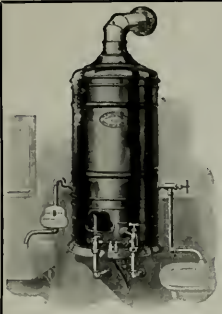

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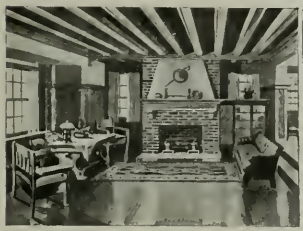

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Contents for March

	PAGE
Bell Tower at Mills College, Cal., Built of Reinforced Concrete - - *Julia Morgan, Architect*	*Frontispiece*
Pergolas - - - - - - - - - - - - - - Illustrated with Photos of Some Typical California Pergolas	35
Beautifying San Francisco for 1915 - - - - - - *H. F. Stoll* Illustrated	45
The Requirements of a Modern School Building - - - - - - *Walter H. Parker, Architect* Illustrated	53
Ruminations and Cogitations - - - - - - - - - - *F. W. Fitzpatrick, Architect*	64
An Attractive San Francisco Home - - - - - - - *Sylvain Schnaittacher, Architect* Illustrated	67
American Stones for Interior Decoration - - - - - -	70
Perfected House Building - - - - - - - - - - Illustrated	71
Concrete Residence Competition - - - - - - - -	72
Building Against Earthquake - - - - - *Fritz Von Emperger*	73
The Essential Qualities and Method of Application of Concrete for Seawall Purposes *Ralph Barker, C. E.*	77
American Institute of Architects - - - - - - - - -	81
Concrete for Country Use - - - - - - - - - - Illustrated	85
Architectural League of the Pacific Coast - - - - - - - -	91
Atelier Progress on the Pacific Coast - - - - - - - - -	91
Modern Veneering - - - - - - - - - - - - -	93
Among the Architects - - - - - - - - - - - - -	94
Editorial - - - - - - - - - - - - - - -	98
Heating and Lighting - - - - - - - - - - - - -	100
By the Way - - - - - - - - - - - - - - -	108

PICTURESQUE BELL TOWER AT MILLS COLLEGE, CAL., OF REINFORCED CONCRETE
Julia Morgan, Architect

Frontuspiece.
The Architect and Engineer of California
March, 1910

THE
Architect and Engineer
Of California
Pacific Coast States

VOL. XX. MARCH, 1910. No. 2.

House of Mr. R. L. Johns, Piedmont, Cal. *William Knowles, Architect*

Pergolas

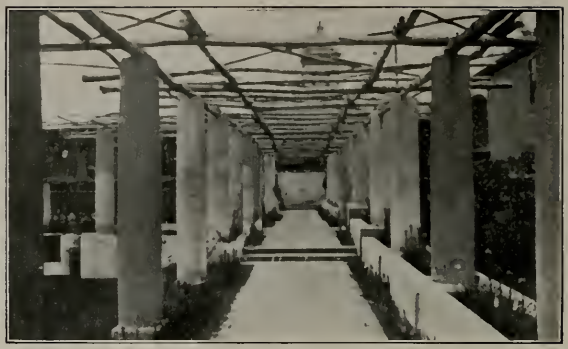
CALIFORNIA, sometimes called the modern Italy, is peculiarly the place for the pergola, and has taken most kindly to it. Here its rigid outlines are soon clothed by luxuriant vines which grow as they will nowhere else.

The pergola originated in Italy, where it was a trellis or arbor standing alone in the midst of the beautiful Italian gardens. The modern pergola was first used here in the formal gardens copied from those of Italy which were attached to some of the residences of the very wealthy, but the idea recommended itself to the American home builder and was used and adapted in a great variety of ways, some of which were very far removed from the Italian model.

In its translation from Italy to California many modifications have been made in the pergola. There it is usually isolated in the garden, whereas, here it often forms part of the house itself, sometimes placed above the entrance, again roofing a second story sleeping porch or a wide piazza, or in its garden form extending out from the house at right angles.

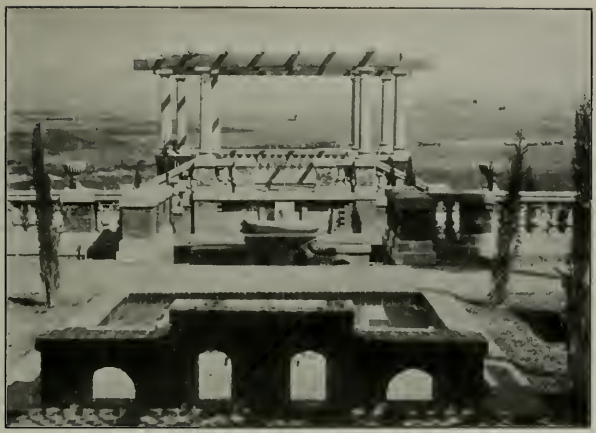
As it is really but a skeleton or framework, it is only when it is covered with vines that it becomes a thing of beauty, and for this reason it ought not to be over elaborated. Long straight lines upon which the vines may cling and twine are far better than jig-sawed rafters or ornamented posts.

If the pergola stands by itself in the garden some care must be taken with its setting. Occasionally one sees a framework of this kind, bare of vines and lacking any apparent reason for being, standing alone in the midst of a garden, or even disfiguring an open bit of lawn. This is an absurd misuse of the idea, and it is so easily remedied that one would think the next arbor day would bring the school children to the spot to plant vines which would cover the neglected framework with a cloak like that of charity.



Concrete Pergola in Southern California

Pergola Entrance to Bungalow of Architect T. Patterson Ross, San Francisco



Pergola in the Garden of Mr. Robert Marsh, Los Angeles
Alfred F. Rosenheim, Architect

A Pergola Porch, Piedmont, Cal.

General View of House and Grounds, Pergolas, etc., of Mr. Robert Marsh, Los Angeles

Sometimes logs with the bark on are used when the pergola is intended to be a sort of summer house, and nothing could harmonize better with the vines than this wood in its rough natural state.

Occasionally stone or concrete is employed, when a classical effect is aimed at, and then the vines and other plant surroundings must be selected to resemble as nearly as possible those of the Italian models.

If the pergola is placed at the entrance to the house, a new use to which it is often put in America, a hood or canopy should be set over it which can be concealed by the vines and this will be a protection to any one standing at the door in case of rain.

The second story sleeping porch is getting to be one of the indispensable features of a modern California house, and more often than not the covering is made in the form of a pergola. Japanese awnings are hung at the sides, which can be raised and lowered at will, and over the top a rolling canvas awning is arranged, for use in rainy weather.

One of the most attractive purposes to which a pergola can be put is to roof an open air living room. In a case of this sort, since the vines which cover its wooden beams can not be rooted in the ground, they are held in great boxes or tubs set at the foot of each support, and under the leafy covering which they afford the meals al fresco are doubly enjoyed, and work or reading is carried on with far more comfort and pleasure than within the house. If the climbing heliotrope is among the plants used to cover the upright posts, the pest of flies will be banished and the inmates of the room will rejoice in their freedom from that annoyance.

Alfred F. Rosenheim, Architect

These out of door living rooms are generally paved with brick or tiles. The furniture is of rattan, both light and suitable, as it will not mind an occasional wetting; easy chairs and hammocks abound, as well as little tables and low stools and hanging baskets of vines or flowers.

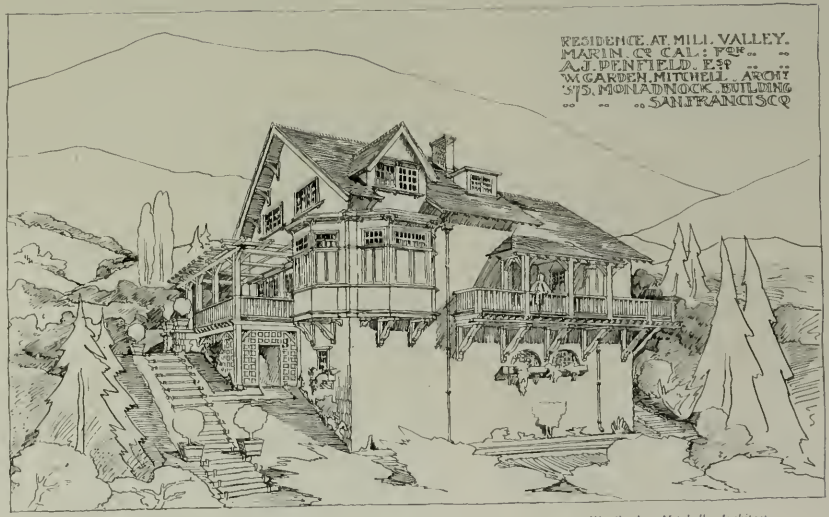
Sometimes the construction of the room is such that casements of glass can be set in at the sides and over the top for the rainy season. When this is done there is generally a big fireplace built against the wall of the house, and with a blazing fire of logs and the added warmth of plenty of rugs and a few draperies, the room will take on such a cheery aspect, that the dreariest of rainy days can be spent there with enjoyment.

In planning a living room of this kind, it should be placed as near the kitchen as possible, so that the serving of the meals will not be a difficult matter, for if it is too much trouble dining out of doors will not be practiced often, and one of the greatest pleasures of open air living will be lacking.

The pergola in its simple form consists of two rows of upright beams arranged at intervals one behind another, each row supporting a girder. Across from one of these girders to another is laid a series of joists, sometimes notched or slanted at the ends. Occasionally there is a lattice of laths placed across these, but in most cases the open spaces are left and are only partly filled with the vines which creep over them.

When this sort of open framework is used for covering the sleeping porch it is more than ever sleeping out of doors, for one can lie in bed and puzzle out the constellations around the polar star or wander in imagination along the milky way. After sleeping in the open air but a very short

House and Pergola of Mr. R. L. Johns, Piedmont, Cal. William Knowles, Architect



Residence for Mr. A. J. Penfield, Mill Valley, Showing Pergola Porch — *W. Garden Mitchell, Architect*

A Rustic Pergola in Southern California Before Treatment by a Landscape Architect

The Same Pergola After Treatment
Wilbur David Cook, Landscape Architect

An Oakland Home With Pergola at the Side Bakewell & Brown, Architects

time the most perfectly ventilated room indoors seems close and oppressive.

In the minds of many people the pergola is associated with marble seats and steps and balustrades, with statuary and fountains and all that goes to make an Italian garden, but in its adaptation the stateliness of its associations has been left behind. It has become an intimate part of the home out of doors. Sometimes it stands twined and covered with roses or wistaria, sometimes it serves the lowly purpose of an arbor for the grape vine. Often it is scrambled over by plants which simply furnish foliage without blossoms, but almost always it is an attractive feature of the house or garden.

And if any one doubts the popularity of the pergola, let him go through certain parts of Los Angeles, Piedmont or Berkeley, where one might almost suppose them to be required by the building regulations, their use is so nearly universal.

Another Pergola Treatment by Bakewell & Brown

Plaza and Basilica of St. Peter's, Rome, Italy

Beautifying San Francisco for 1915.

By HORATIO F. STOLL.

THE plan of the San Francisco Board of Supervisors to erect a temporary City Hall, or series of buildings to house the municipal departments until a permanent structure can be completed, is an admirable one. It will save the city a monthly drain of several thousand dollars in rent, bring all the departments conveniently together and enable San Francisco to find ways and means to build a pretentious City Hall that will be architecturally beautiful and a credit to the metropolis of the West.

In planning for the new structure, there have been any number of suggestions offered by anxious architects desirous of solving the problem of providing San Francisco with a suitable municipal home. "Let us make it a monumental pile commemorative of San Francisco's remarkable rehabilitation," says one architect with high ideals. "A modern business structure with offices that are comfortable and well lighted is what we need most," remarks another more matter-of-fact member of the profession. One would rush to completion at once one wing of the new City Hall, the idea being to house the city officials promptly and complete the building later when our finances will permit. Another applauds the plan of the new Board of Supervisors and insists that we go slowly, consider posterity, and not bequeath to it a huge office building that will be an eye-sore and a reflection on San Francisco's taste and judgment.

The latter viewpoint is probably the sanest. City halls are built to last for centuries and in planning one, the public should keep in mind the possibilities of the city's future growth as well as its present needs. Therefore, let us take our time. We have done without a city hall for four years and we can get along with a makeshift structure until the necessary improvements like street and sewer work, school buildings, etc., are completed and out of the way. We can be patient if we know it is worth our while. But we want to be able to show the millions of people who will visit San Francisco in 1915, when the Panama-Pacific Exposition is in full swing, that we have a sense of civic pride. Nothing would impress them more than a beautiful City Hall, properly set off with attractive grounds, for there is no real necessity for the prospective building reaching out to the edge of the sidewalk. All our federal and municipal structures are unfortunate in this respect. Take the new Customs House, the Post Office, the Mint and the new Hall of Justice. None of them show off to the best advantage, because they are crowded and hidden by the adjoining buildings.

The City Hall site is practically the only large area in the heart of the city that will permit us to pay some attention to perspective and a proper setting for a magnificent building, and we should not waste the opportunity. It will be a good investment to erect a temporary building on some unused lot belonging to the city or on such a part of the City Hall block as will not interfere with the construction of a permanent structure.

In the meantime, let the remainder of the grounds be cleared at once and set out in one sweeping lawn. The cost will be comparatively small and the green carpet will be decidedly welcome. The appearance of the city in the neighborhood of the triangular space bounded by McAllister, Market and Larkin streets is anything but cheerful, Marshall square being the only bright spot that meets the stranger's gaze. An idea of how easily a dreary, debris-strewn stretch can be changed into an emerald treat for

The Palatial City Hall of Paris (Hotel de Ville) on the River Seine

the eyes is afforded by the modest grounds about the new Public Library building, on Hayes street, near Franklin. It is to be hoped that the whole block in time will be covered with grass and shrubbery.

The need of an open square in the downtown district was never better illustrated than during the recent Portola festival, when the only suitable place that could be found for the meeting of Queen Virgilia and Don Gaspar was Union square. Only a comparatively few thousands of the mighty throng that congregated in San Francisco on the opening day of the festival were able to get a view of the ceremonies. The same was true of the fireworks display at night.

What a pity that our forefathers should have shown such a lack of foresight in selling that portion of the City Hall grounds facing on Market street! What a pity, too, that the city did not grasp the opportunity after the fire to again acquire the land and make it the nucleus of a civic center as suggested by Burnham! The opportunity will never come again. It would have provided San Francisco with a remarkable setting for the new City Hall and a series of other municipal buildings. There would also have been ample room left for a plaza that could be used to advantage in open-air concerts, parades and pageants of all kinds.

There is scarcely a capitol of Europe that does not point with pride to some beautiful square. The utility and desirability of these great open breathing spaces in the heart of a large city is impressed on every visitor abroad. Who will forget, for example, the first view of the immense square in front of St. Peter's, Rome? The distance across the piazza to the flight of stairs leading to the portico of the great church is nearly one-fifth of a mile. The magnificent colonnades of Bernini—two sweeping half crescents of 284 columns, 64 feet high—lead the eye up to the facade and dome of St. Peter's, while on each side, the middle distance is broken by the silver spray of two immense splashing fountains; in the center is the famous red granite obelisk, brought to Rome from Heliopolis by Caligula, which formerly adorned the Circus of Nero. Its present location makes it very appropriate, for it is topped with a gilded cross that glitters 132 feet above the pavement and typifies the triumph of Christianity over barbarous paganism. No one can look at this great plaza and basilica of St. Peter's without associating it with the great religious ceremonies with which it has been connected, especially that of the Easter benediction when thousands of pilgrims have bared their heads, knelt on the pavement and under the canopy of the blue sky received the papal blessing.

The Place de la Concorde, which has been designated "the nucleus of Paris," is considered by many traveled people to be the most magnificent square in the world. Whichever way the tourist looks—north, south, east or west—a brilliant boundary confronts him. The spacious area itself causes the unaccustomed visitor to catch his breath in admiration and delight. The first bewildering glance reveals in the center the well-known Egyptian obelisk of Luxor flanked by two sparkling fountains and guarded by a cordon of colossal statues. On one side is the swiftly flowing Seine, spanned by a bridge five hundred feet in length; upon another lies the garden of the Tuileries; a third side opens into the Champs Elysees; while toward the north a handsome street discloses the majestic portal of the Madeleine. Eight statues of colossal size are seated around this square, each symbolizing one of the prominent cities of France, while forty artistic bronze shafts illuminate the scene at night.

At first thought, this splendid square, crossed and recrossed continuously by joyous crowds, seems to have been appropriately named "The

The Volkskirche, Facing on Maximilian Platz, Vienna, One of the Most Beautiful Public Squares in Europe

Place of Peace." But a moment's reflection almost leads one to believe that the title was given ironically. For on the spot where falls today the shadow of the obelisk rose formerly the hideous guillotine, whose glittering blade in swift succession descended on the necks of the ill-fated Louis XVI, beautiful Marie Antoinette and thousands of nobles of France.

The City Hall of the French metropolis, known as the Hotel de Ville, is situated on the right bank of the Seine, having been built by Balla and Deperthes on the historic site of the former hotel destroyed in 1871 during the convulsions of the Commune. The building is occupied by the Prefet de la Seine, the head of the department which practically coincides with Paris. It is a noble specimen of French Renaissance and is adorned with statues of eminent Frenchmen of all ages. The entire exterior is faced with immaculate white stone, the construction of the immense roof being perfect to the smallest ornament. Although built on a large scale it is so elegant, however, that it seems more beautiful than vast and impresses one rather by an air of distinction, of aristocracy, than by any display of wealth or power. In addition to being the council hall of a mighty and turbulent democracy, it has been the scene of many a spectacular reception to royal visitors and distinguished guests from every land.

In this connection it seems to me it would be a good plan for San Francisco to embody in our new City Hall a proper reception room for the public welcome of notable guests. This would do away with the spirit of rivalry which exists among the leading hotels to capture the prize. It would also provide a proper background for such a public gathering and would enable every citizen to have an opportunity to greet the city's guests. Elaborate banquets, at a prohibitive price per plate, could follow later at the hotels. Besides such a reception room would add dignity to the mayor's office and enable him to extend the city's hospitality without being dependent on the various commercial bodies and wealthy citizens to bear the necessary expenses involved.

One of the most splendid city halls in Europe is the Rathhaus, of Vienna, the home of the mayor and the bureau of the whole municipal administration. The cornerstone of the building, which is in the Italian style of the Fourteenth Century, was laid in 1873 in the presence of the Emperor Franz Josef and the nobility to celebrate, for the second time, the centenary commemoration of the deliverance of Vienna from the Turks. Over $7,000,000 has been lavished on the beautiful structure. Its massive tower, adorned with fine reliefs, reaches the height of 320 feet and holds aloft a gilded statue of the so-called Eisener Mana (iron man), a halberdier with a weather cock in its hand. Within its enclosures are no less than seven courtyards, some of them surrounded by arcades resembling cloisters. Two stairways of white marble lined with gilded balustrades lead to a series of municipal rooms, which are said to be unequaled in any similar structure in the world. One of these is the historical museum where are gathered all the interesting relics of the city, from the days of the Romans to the present time.

This museum idea could also be adopted by San Francisco. Why would it not be a good plan to set aside a spacious room in our City Hall as a museum to show the important stages of our municipal growth, and the good work done by prominent men who have governed San Francisco? The pages of our short but eventful history are filled with picturesque and epoch-making incidents that will be sure to interest strangers and future generations to come.

Plaza Acquaverde, Genoa, Italy, Containing the Famous Monument to Christopher Columbus

Vienna, by the way, is ornamented with a number of notable squares, one of the most attractive being Maximilianplatz. It is triangular in shape, parked and surrounded by a number of splendid structures. The most striking is the Votivkirche, the finest church in the Viennese metropolis. It stands in an elevated position, on a terraced foundation, which greatly enhances the architectural effect of the building. It is the work of the architect Heinrich von Ferstel, and is erected in the form of a cross in the noblest Gothic style. The front is formed of two splendid spires, a beautiful facade and portals which are adorned to such a degree with sculptures and ornaments that the whole produces the effect of stone lace work. The unsuccessful attempt on the life of the Emperor gave rise to the building of this votive monument, which was initiated by the Archduke Ferdinand Max, for a brief time Emperor of Mexico, after whom the square was named Maximilianplatz.

The Votivkirche faces the Ringstrasse, one of the famous streets of the world. It is a broad thoroughfare following the lines of the mediaeval fortifications now demolished, and its circular form imparts to it a charm that no straight avenue can possibly possess. It is a splendid girdle, dividing yet uniting the old and new Vienna, lined with imposing modern structures bordered by handsome parks and squares, and containing a bridle path, two driveways, spacious sidewalks and well-shaded promenades. These buildings, having been constructed comparatively recently, present a fresh and elegant appearance and are remarkable for their fine proportions and their immense amount of sculptured ornamentation.

In strong contrast is Berlin's celebrated street, the Unter den Linden, or "Under the Lime Trees," which is straight as an arrow. The Brandenburg Gate forms the commencement of this beautiful street. At a distance of two hundred feet, imposing buildings arise on either side. While the Unter den Linden can not for a moment be ranked in beauty and brilliancy with either the Champs Elysees, of Paris, or the Ringstrasse, of Vienna, yet the number of palaces, monuments and statues which adorn the thoroughfare probably make the boast of the Prussians true, that no city in the world presents so many notable structures, on a single street as does Berlin.

Perhaps some day San Francisco will also be able to boast of a Civic Center. In the meantime, we have certain shortcomings which must be promptly remedied. We need an immense auditorium for conventions, and a large opera house so that the finest productions of the Metropolitan and Manhattan Opera Companies may be given here. We should also have a modern depot.

Abroad they understand the value of winning the approval of the stranger from the moment he alights from the train. One who does not understand this civic pride might easily mistake the railway stations of some of the large European cities for government buildings, so palatial are their dimensions, and so imposingly designed are their huge walls and towers. Some years ago, the City of Genoa set itself the task of improving the area known as the Piazza Acquaverde, in front of the principal railway station. There it placed appropriately the world-famous statue of Christopher Columbus and surrounded it with turf and flowers "in order," as the Genoese authorities frankly declared, "that the first impression of strangers coming into our city may be favorable."

Seattle, Washington, provided a castle-like depot for its exposition visitors, and the cities of Southern California have also made every effort to win the approval of the tourist and colonist from the start. Their depots

are usually low, rambling structures, covered with trailing vines and surrounded with well-kept lawns and flower beds, tropical trees and shrubbery. The flowers delight the stranger, especially if he arrives in the winter months, when the Eastern states are covered with snow. It is his dream of California come true.

There is no legitimate reason why a city with a half million people should not possess a handsome depot. It is true our Ferry building is striking and unique, but whatever good impression is made from the water side is lost the moment the visitor passes through the building and looks out upon East street. The semi-circle of temporary wooden buildings, topped with hideous signs, gives the city an air of crude provincialism and makes the stranger smile. The depot at Third and Townsend streets is a disgrace. The accommodations are miserable, the building flimsy and cheap, and the surroundings anything but inviting. The Southern Pacific Company is in duty bound to provide a proper depot for the hundreds of thousands of people who will get their first glimpse of San Francisco, in 1915, at Third and Townsend streets.

Another thing which we must consider is our streets. Let us pave them properly and promptly, get our sidewalks in good condition, cut down charred tree trunks that still disfigure some parts of the burned district, and set out new trees, especially in the outlying districts. One practical result of making streets look beautiful and artistic is that they become places of enjoyment for the citizen. It is not altogether a difference of temperament that causes Europeans to spend so much time seated on spacious sidewalks, under the awnings of cafes. If our streets were made as attractive as theirs, we would, in time, also spend more time in them.

As it is, our new shopping district and a few blocks on Fillmore and Mission streets are practically the only enticing places for strangers. We must, therefore, beautify other sections and provide all the attractions that go to make up the life of a great city if we hope to keep our exposition visitors in San Francisco for weeks instead of a few days.

* * *

Some Notes on Color Harmony.

AN EXCHANGE gives the following as some of the examples of color harmony:

Lilac and gold harmonize.
Lilac and cherry harmonize.
Lilac and scarlet are harmonious.
Lilac and crimson harmonize.
White and scarlet harmonize.
White and pink harmonize.
Black and white, a perfect harmony.
Black and orange, a rich harmony.
Black and brown, a dull harmony.
Black, white, yellow and crimson harmonize.
Black, orange, blue and scarlet harmonize
Red, orange and green harmonize.
Scarlet and blue harmonize.
Scarlet, blue and yellow harmonize.
Crimson and gold, a rich harmony.
Yellow and purple, an agreeable harmony.
Yellow and lilac, a weak harmony.
Yellow and white, a poor harmony.
Yellow and chestnut harmonize.

The Requirements of a Modern School Building

By WALTER H. PARKER, Architect.

THERE is no division of public or semi-public buildings that has received more theoretical study and the practical application of such study, than the public school, especially in the larger cities. In less populated districts and in small towns various makeshifts are frequently spoken of as educational edifices, the failure to build something creditable being attributed partly to the architect's neglect to insist upon what he believes to be the correct solution of the problem, and partly to his seeming inability to overcome certain unfavorable local conditions.

One injustice to the conscientious architect, especially in some of the outlying districts, is the fact that the selection of school house plans is often left (and more or less legally so) to a board of trustees who are incompetent to distinguish plans of real merit from those impracticable or unsuitable to the funds available. Influence is occasionally brought to bear upon various members of the board not only in the selection of plans, but upon the arrangement of the plans themselves, whose unity may be confused by inconsistencies conforming to opinions or "hobbies" of instructors, important in themselves when taken up at the proper time, but often wisely overlooked in comparison with conditions to be considered of more vital importance. These two elements may possibly be overcome in time by the profession itself or by the advancement of ideas of the parties interested. However, in the more thoughtful communities new educational buildings are now approaching a higher degree of efficiency, due to the advancement of ideas of the architects themselves and to the growing interest that the public in general is taking in municipal and civic improvement. Too much thought upon the principles of planning, good construction and environment can not be spent upon buildings whose occupants are unconsciously absorbing everything around them.

It is a well recognized fact that good proportions and lines of any building do not depend upon its cost, and the result, if well studied, can be harmonious to the surroundings and consistent with the materials available; in other words, an attractive building need not necessarily be an expensive one. The building should be so designed that it will be safe, comfortable and convenient for its occupants, and arranged so that it may be economically administered and kept clean. It should be as near fireproof as possible.

As in most buildings the controlling elements are those relating to the planning, equipment and construction; the principal parts being in this particular case, the class-rooms themselves and communications, with as many secondary rooms of such sizes as to accommodate the purposes for which they are intended. In planning, the exterior need not be seriously considered (except unconsciously as it invariably is when handled by those who see in elevation and feel in plan), but in order that the finished building may harmonize with its surroundings, and before actual work'ng draw

The New Main Building at Belmont School, Belmont, Cal. *Walter H. Parker, Architect*

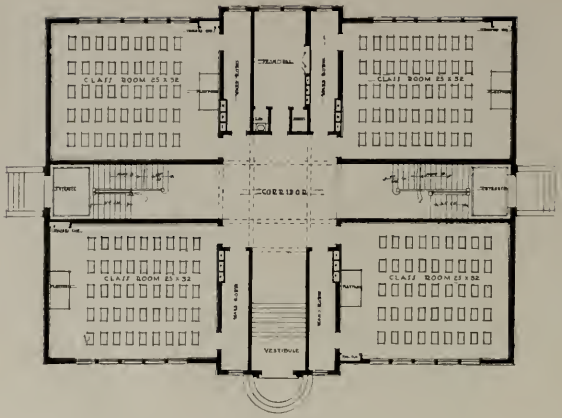
ings have been started, some study should be made of the grades, exposures, approaches, even sky line in some cases, and other physical conditions that may make or disfigure architecturally an otherwise correctly appointed building.

If an assembly hall is to be included in the plan the entire scheme will be materially affected by its location. In the larger schools such a room is invariably required, in fact any school containing more than eight rooms may be considered as requiring one. It is preferably located on the first floor—not for economic reasons, however, but for the fact that it can be more readily reached from that location without climbing stairs and the exits to grade may be more effectively placed. The additional height of this room, its large size, the problems of heating, ventilation and lighting, the long unsupported spans over ceiling, its cost, etc., have great influence upon its location with respect to the other parts of the building.

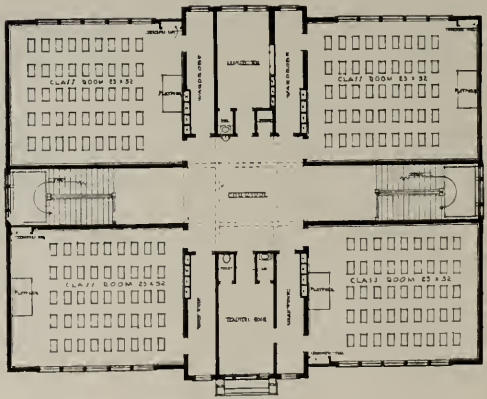
In many of the more recent schools, the auditorium is placed on the ground floor between two wings or the central part of an E-shaped building and of such size as to accommodate all the pupils at one sitting. It should be lighted from the sides, and the windows may be higher from the floor than is found in the ordinary class-rooms. If it is not feasible to arrange the auditorium so that light may be obtained from both sides, skylights may be introduced but the latter should not be relied upon entirely, as outside light of some kind is imperative. Exits to grade should be located independent of those opening into corridors, so that the room may be emptied in a reasonable time. An assembly hall or auditorium located in the center of a building, though convenient, is undoubtedly incorrectly placed from a hygienic standpoint, to the detriment of the health of its occupants for whom it was originally intended.

Corridors are proportionate in width, to the number of pupils passing to or through them and for the accommodation of any articles that may be placed in them. That corridors should be any particular size is arbitrary, but school buildings of a more or less typical size and kind may have approximately the same size of corridors. Main corridors may be 12 feet in width and should be well lighted and ventilated at ends and from both sides if possible. Wide windows on stair landings throw light both up and down stairways. The corridors of the second floor need not be of the same size as those of lower floors, but are usually so for constructive reasons.

Light is admitted into class-rooms generally from one side only; small windows are sometimes placed in the rear of the room, but they are not intended for lighting purposes, it being desirable to secure some sunlight in every room when not occupied. They should be fitted with curtains and otherwise kept closed, as the light may be trying to the instructor's eyes. The bulk of the lighting for class-rooms is properly secured from the left side and toward the front of the pupil, the equivalent area being from one-fourth to one-fifth of the floor area. Shadows may be eliminated to some extent by narrow mullions, and the most ideal results will be obtained by a mass of windows closely grouped together, as those in the New York schools of more recent construction. This arrangement does not adapt itself to some styles of architecture and fairly satisfactory results may be had with other arrangements provided windows are not placed too far apart. These requirements hold in general for grammar schools, but high or secondary schools do not require such exact conditions, due to the fact that students are not confined in any one room the entire day and are fewer in number per floor area. Bilateral lighting is permissible only in wide study rooms over 30 feet in width. Windows for class-rooms



First Floor Plan, 8-Room Building



Second Floor Plan, 8-Room Building

Design for an 8-Room Building
Walter H. Parker, Architect

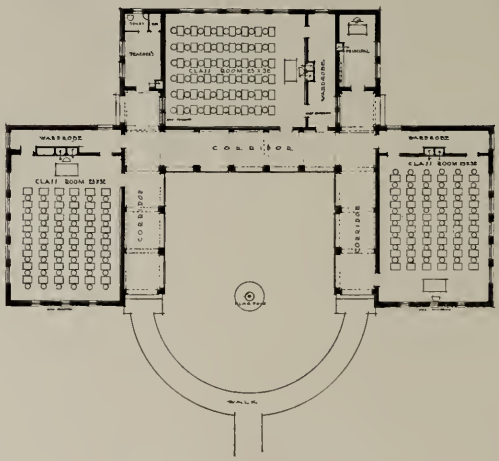
are placed about 3½ feet above the floor and extend to within 6 or 8 inches of the ceiling. The windows for the assembly hall need not be so liberal in size and some skylight lighting is not objectionable. Drawing-rooms require north light and may have a skylight in addition if possible. The lighting of laboratories and other special rooms is more flexible, and may be arranged specially to suit their equipment.

Typical class-rooms are 24 feet by 32 feet. They may be any size, it is true, but that size will accommodate 56 primary or 48 grammar school pupils—all that one teacher can properly handle, according to opinions of educational authorities. A width of 24 feet will also admit sufficient light along the wall opposite windows and the length of 32 feet will permit easy sight of the blackboard behind the teacher's desk and will not be too far to readily hear in the farthest part of the room. In most of the best public school buildings throughout the country this size, or approximately this size, is used, and may be considered a standard.

Cloak-rooms or wardrobes are not less than four and one-half feet in width and may be more. They are usually located at the end of a room adjacent to the class-room, this arrangement allowing a window in one end. In some cases they are taken off of the corridors but in most buildings for ventilating and other reasons are preferably located where first mentioned. Whether the pupils should enter the rooms first and then pass into cloak-room or vice versa, is a live question in all communities, and both arrangements may be found in some of the best buildings. A door into both, at corridor would simplify argument and allow either system to be used by simply locking one of the doors. Hooks are placed at different levels, generally in two rows, and are staggered about 12 inches apart.

Fire escapes, theoretically, are a valuable assistance and in some states are called for by law, but their inefficiency may be readily demonstrated

Design for a 3-Room Rural School Building
Walter H. Parker, Architect



Floor Plan of 3-Room Rural School Building

in the exit of a building by pupils using them under normal conditions, let alone the evacuation of the entire roll during excitement by fire or smoke. Every two-story building containing more than six rooms should have two stairways, located at each end of the building if possible and opening at grade entrance.

In high school buildings smaller class-rooms than 24 by 32 feet are often better adapted to some of the subjects taught, larger rooms being reserved for laboratories, shops and assembly hall, the latter often being used for a study hall. The introduction of manual training facilities, gymnasium, chemistry and physics laboratories, commercial departments, all require more rooms of various sizes to suit the purposes for which they are intended.

Additional administrative rooms will be required, such as principal's office, teachers' rooms for both sexes, and one or more instructors' offices.

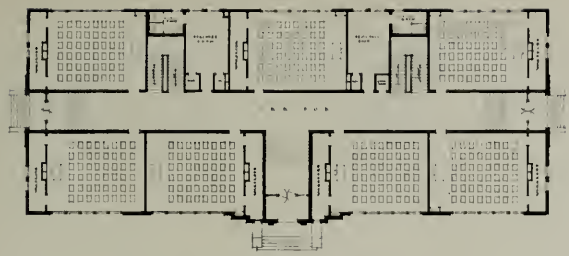
Cloak-rooms and wardrobes may be eliminated with perfect success in high school buildings by substituting lockers either in the basement or in the corridors. The lockers—the metal ones preferred, may be arranged so as not to be in any way objectionable so far as appearance is concerned. In many schools the boys' lockers are located in the basement and the girls' lockers on the second floor corridor, in which case it will be found very convenient if the girls' toilet is located also on that floor. Combination locks may be supplied to lockers which will not readily get out of order and will be found superior to locks with keys, in that they can not get lost.

A lecture room is necessary in conjunction with the physics and chemistry laboratories and if of sufficient size may be used for lecture purposes for other studies than those two mentioned. The room must be large enough to comfortably seat at least thirty, and should be large enough to seat more than twice that number if the room is intended to be used for scientific lectures with a stereopticon. In the latter case raised seats are arranged for as in a "clinic." The location of this room is important, as it must be accessible to the corridors as well as to both laboratories. The platform for the seats is stepped up from the demonstrator's table 6 to 10 inches per step, the higher ones being in the rear of the room. Enough height will be obtained under the last two rows of seats to provide considerable space underneath, which may be used to advantage for locker and storage room for chemistry or physics laboratories,—if either directly adjoins the lecture room. The best seats are those of the opera chair type, with one wide arm that may be dropped down at the side when not in use. Some provision must be made for darkening the room at times, which may be accomplished by opaque curtains sliding in wood or metal grooves and operated by hand. Other equipment for this room will consist of a demonstration table similar to the chemistry bench, though longer and supplied with sink, gas, water, electricity, etc. Also a cabinet for storing the slides for stereopticon; a case similar to a library card file and of sufficient size to take the negatives, being frequently used.

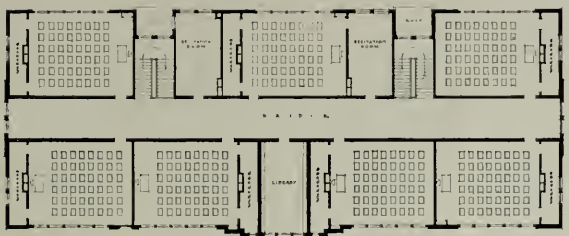
The chemical laboratory is best located on the top floor, as odors are less likely to penetrate through the building when located there. The size will depend upon the number of pupils taught, 30 square feet per pupil being taken as an approximate space, but better results will be obtained by blocking off all articles of size that will be placed in the room, tables, sinks, etc.

The use of acids and destructive chemicals in the chemistry department plays havoc in time with wood and plumbing pipes, eating away and

Design for a 14-Room Building *Walter H. Parker, Architect*



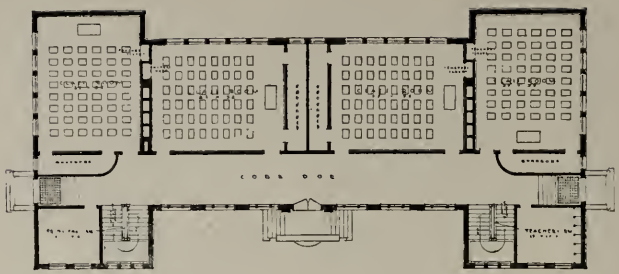
First Floor Plan of a 14-Room Building



Second Floor Plan of a 14-Room Building

discoloring parts, so that it is impossible to keep the laboratory in a presentable condition. Glass may be used for the tops of work tables, and though expensive, it may be obtained in almost any thickness and in either white or black opaque colors. Stone of some varieties is sometimes used, also marble, either material affording far better wearing surfaces than the common wood tops usually found in smaller schools. Plumbing pipes should be lead lined, and all sinks should be porcelain lined to prevent acid from eating parts inaccessible and whose condition is unknown, until some extensive damage is done. The customary student's chemical work table is provided with two or more sinks, water supply, gas outlets, a combination shelf for acid-proof materials and supplies. Many stock tables do not provide toe space at floor and are uncomfortable to work at. They should be raised either above the floor or spaces left at different intervals to allow pupils to work close to the table.

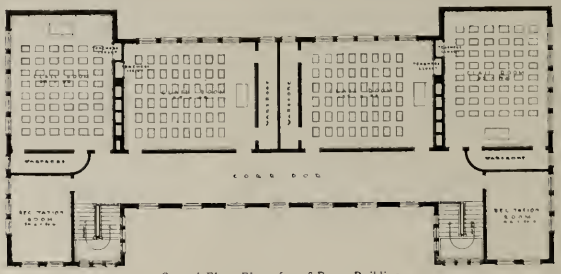
Chemistry benches or work tables may be had from manufacturers and may be single or double and of any length desirable. The size most used is the double bench, which is about 4½ feet wide and 10 to 12 feet long, requiring a working aisle of about 5 feet in width. The preference for tables of this type is to save room taken up by the aisle and to simplify plumbing. Chemical hoods should be well ventilated and should have glass sides. Where mechanical ventilation is installed in the building they may be connected to the system. They are about eight feet in height and of variable widths, according to the number of pupils to provide for.



First Floor Plan of an 8-Room Building

Some kind of a store-room is necessary and lockers are desirable for the storage of tools and supplies.

Theoretically, the proper location for the physics laboratory is in the basement, as far removed as possible from vibration or electrical influences, such as dynamos, etc. Practically for the average high school, it may best be placed near the chemical laboratory and closer still to the lecture room, as both studies will require its use. This close relation also facilitates more convenience to the instructor, who may teach both subjects. Physics work tables are similar in construction to chemistry tables to a certain extent but are more solidly built, are not so high from the floor and need no sinks. Often a long table, or more properly termed shelf, is constructed along the entire length of one side of the room, where different experiments may have abundant room. This shelf or table is solidly built into or against the masonry wall to reduce vibration. The top is at least 2 inches thick and permits various articles to be clamped to it. Cantilever brackets are secured to the walls and in some cases some means of securing articles to the ceiling is provided for, heavy eyes screwed into the beams, if



Second Floor Plan of an 8-Room Building

of wood, or secured in other ways. A balance room is necessary and may be as already described for chemical laboratory. A preparation room will be found convenient for setting up experiments and apparatus ready for demonstration and should be located between laboratory and lecture room. The dark room need only be a small room fitted up with sink and shelving. Both chemistry and physics laboratories will require more or less cases and cupboards with glass doors, and if thought has been expended on them at the proper time they may be built in next to the heating and vent flues by furring that wall, and thus avoid the necessity of their otherwise projecting out into the room. In this manner they are out of the way and will catch no dust.

Biology equipment consists of an aquarium with glass sides and running water; work tables with drawers on either side and numerous shelves, cases, etc., for the housing of specimens and tools. Work tables are made in various lengths to suit the requirements and number of pupils. A wide flat-top table with cases of drawers at different intervals, will give satisfactory results.

The introduction of manual training and mechanical drawing in many of our modern high schools, requires special rooms, the former being best located in the basement, if well supplied with light. When placed there, noise which can not be eliminated will be diffused and little or no inconvenience on that account will be found in the class-rooms above.

The location of heating and ventilation ducts is very important, and should be considered to a certain extent when the plan is first studied. A proper arrangement of them will simplify the cost of later installation. In school buildings their approximate size is known, so they may be blocked in when planning and the final heating and ventilating requirements will not seriously rearrange the plan. The heating and ventilating system plans and specifications, is work for a mechanical engineer for all buildings greater than six rooms, and the architect need not attempt to work out its details, though he may understand the theoretical and practical requirements and be able to make the proper tests as well as superintend its installation. Thirty cubic feet of fresh air per minute per pupil is required, warmed during certain parts of the year and distributed so that no part of the room will vary more than 2° F. under normal conditions.

Velocities greater than 2 feet per second at inlet may cause a draft on some pupil and care should be taken to see that the ducts are of sufficient size to accomplish results accordingly. The warm air inlet is placed in the wall some eight feet from the floor, the air coming into the room, circulating and then passing through the cloak-room door, which is made with a wire screen in the lower half. The vent duct is placed in the cloak-room wall and by this arrangement the warm air, having performed its function and lost part of its heating properties in the class-room, is used to ventilate the cloak-rooms.

Assembly halls will require more complicated arrangement than for class-rooms, as they must be heated and ventilated at certain times, and some installations are so arranged that this room may receive (by closing up the ducts to some of the other rooms) the same amount of air per pupil as furnished to class-rooms.

Whatever form of design of heating and ventilating apparatus be used, it must be of sufficient capacity (including size of ducts) to effect results under all conditions and circumstances. The entire system is generally slighted and cut down to such an extent that numerous devices for reducing piping, size of heaters, number of coils, etc, are practiced with an aim to reduce the total cost.

Ruminations and Cogitations

By F. W. FITZPATRICK.

Mr. F. W. Fitzpatrick

IT IS rather interesting to scan the French illustrated journals these days and note the hideous things that are receiving prizes in the famous "facade competition" now going on in Paris. What a fall, a debasement, there has been in French art! Ages ago that art, particularly architecture, was superb, the most beautiful in the world, the French architects were pre-eminent, and even twenty-five years ago we felt that our education was incomplete unless we sat for awhile at the feet of the masters in some of the great ateliers of Paris. But the decadence has been rapid and the present state deplorable. It would be difficult to trace the causes, but the French architecture of today suggests cheap absinthe and cheaper cigarettes.

Perhaps all this Art Nouveau stuff is but the beginning of a real reform and new adjustment to new conditions. Transitory periods are invariably barbarous. Anything really new is always carried to extremes before it acquires a steadiness and balance that will make it lasting. So with these French buildings of today. Their architects decline to work in any of the old school styles and they seldom have the ability to do something really artistic outside of those styles. They haven't yet acquired the art of merely embellishing useful and simple forms; their one ambition is novelty, and that novelty is now merely garish, strained, freaky, vilely ugly. There is nothing simple and beautiful about their compositions, they are all wrought most violently, apparently conceived in sin and brought forth in most terrible pain, nightmares. Indeed, if a boy of mine should evince any desire to go to France now in order to brush up on the art architectural I would spank him.

In Germany things are not much better, their buildings all look sloshy, beery; in England they are still chopping out designs with an axe, and only in Vienna and some cities of Italy can the traveler be edified by the present-day work of the architects. We sometimes feel a bit provoked with our American architects for certain unseemly things they perpetrate, but, great Scot! one need but spend a week abroad to come back pretty well satisfied with the present productions of our home talent.

* * *

NOT THAT we are always satisfied with that talent in all its phases and peculiarities. Oh no, that would be too great a concession to make, particularly for me who, perhaps unfortunately, have to rub up so intimately against so many of the vagaries of that talent. It is really distressing sometimes to observe the childlike confidence and appalling assurance with which some architects incur responsibilities for which they are no more fitted than a new-born babe. Political, personal or social reasons impel an individual or corporation to give an important commission to an architect. His first thought is never as to his fitness to handle it, that is a minor consideration. He has sublime confidence in his own ability. The

fee is the major consideration and the next is how stunning an exterior he can get up that will stand as a "monument" to his skill. The average architect will undertake anything and trust to good luck to squirm out of it. And the average layman can seldom catch the mistakes and shortcomings of a plan until the building is up and it's too late to mend. The profession is perhaps at a disadvantage in this respect; a doctor buries his mistakes, a lawyer can fizzle in one court but carry his case up and not repeat his error, though, of course, this additional litigation will cost his client much money, but with an architect, his mistakes are made in "unyielding steel and imperishable stone," and the building stands in all its unfitness confronting him year after year. It's sometimes a wonder to me that people have not tried to devise some other means of building than by confiding their money to the unskilled hands of the average architect who is so deuced ready to spend it for them. Here are a few "bulls" that have been brought to me for correction, but too late to be completely mended, and all within the past thirty days: a building wrongly planned for the lot, now half completed, the best we can do with it is to improve the light in the upper stories, but the rental will be $5,000 less a year than it should have been had the thing been properly planned from the start, and $5,000 on a total of $35,000 is a pretty heavy per cent of loss. Next, a factory for some special manufacturing, the building so planned that the regular machinery can not be operated to advantage and new and special machines have to be made to fit the building, an unnecessary expense, add to which another building will have to be built for storage that, with a little forethought, could have been planned for in this one. Another client finds himself with an eight-story building on hand where five stories are all that the lot and location justify. He was beguiled into the additional height by his architect, who wanted to make a show. Another one wanted to build flats, but his architect insisted upon an office building. It didn't rent and now we are turning the offices into apartments and, of course, Mr. Client is paying for Mr. Architect's mistake. And so they go. But, yes, that's only one side of the picture. There is a pleasanter side, too. And then again, there is still another side where we see the client doing foolish things with an architect's good work. In this he is often helped by the different craftsmen. Take in external design, for instance, an architect will finish up a very handsome building, beautiful lamps at the doorways, etc., then some one thinks more light is needed, the architect is not consulted but an electrician is called in who forthwith hangs a hideous arc-lamp out in front somewhere on a long string from the cornice. Or a sign man will come along and daub his black and gold right over a beautiful frieze. Take even in our big public buildings, you'll find discordant notes injected somewhere or other. Why can't people learn that since they have confidence enough in an architect to confide the buildings to a certain stage of completion to him, they might as well consult with him about anything that is done to that building and at any time?

* * *

IN Washington just now there are being held meetings of Governors, Conservation Commissions, people interested in uniformity of laws, all sorts of reform movements. Why not try and do a little something toward uniformity of building laws? There is no reason on earth why a brick wall twelve inches thick will not carry as much in Maine as in Wyoming. Let our building regulations be uniform and standardized. More than that, let each State inaugurate minimum building requirements, establishing the lowest degree of excellence that will be permitted anywhere within its borders. As things are now, outside of the larger cities, you can build any way you wish and anything you wish. With such State requirements

as a basis, the cities and towns can add thereto such other requirements as become essential in their growth, but that growth will not be impeded by reason of go-as-you-please methods now countenanced by the State governments. A subject that could well be considered by the Governors while they are thinking about conservation of the forests and water and mines. The conservation of our cities deserves some thought, too.

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THE State has ever been too fearful of infringing upon private rights. In building, as in everything else, that solicitude for the individual has been carried to the point where it has become a detriment to the whole community. Every time one suggests some building restriction or betterment for the good of the community (and the good of the individual, for that matter, if he would only see it), the authorities are seized with solicitous fear that it may cost some one a penny more.

It is novel and refreshing, therefore, to find a man in authority actually suggesting a betterment rather than having to be pushed into it. Major Judson, the energetic Engineer Commissioner of Washington, has a bill up now before Congress looking to the regulation or elimination of unsightly, undesirable buildings, or at least abstaining from adding new ones to the existing ones. The substance of his bill is that if 75 per cent of the owners of property in any one block object to the design or construction of a proposed building upon that block no permit will be issued for it in that form. Drastic but a step in the right direction toward the City Beautiful.

More power to the gallant Major!

* * *

She Lets Them Swear

Speaking of Fay Kellogg, the architect, in Human Life for February, Ada Patterson writes: She walked the scantlings eighty feet above ground in the Hall of Records, watching the workmen at their work, and directing them where need be, vigilant that the architect's plans be carried out to the minutest particular.

"I have never allowed myself to remember that I am a woman," she said. "When men have wanted to make concessions for me for that reason I have said: 'None of that. I want to be treated neither as a superior nor as an inferior, but as an equal.' But, on the other hand, I have yielded points when it has been necessary."

There were nineteen sorts of special workmen engaged on the woodwork alone of one of the big buildings she planned. Miss Kellogg, in short skirt and round, soft felt hat that she wore veilless, climbed the building to its crown and directed their work. "If the men wanted to swear I always let 'em. If it became necessary I even swore myself."

Most modest is this best known of women architects. "I am not proud of anything I have done, but I shall be proud of the things I intend to do. I want to build a skyscraper—a different and better skyscraper than has ever been built."

In speaking of the honesty of women as business factors, Miss Kellogg paid tribute to her sex with a declaration for which she challenged denial. "Graft is a temptation that the architect frequently meets. He often recommends the awarding of contracts to builders and others who furnish materials. If he is venal, many a chance comes to receive a check for courtesies of this kind."

"If all the architects of the capitol of Harrisburg had been women there might not have been a graft scandal."

"Probably not," said Fay Kellogg, architect.

Entrance to Residence of Mr. Melville Schweitzer, San Francisco
Sylvain Schnaittacher, Architect

An Attractive San Francisco Home

THE exterior and interior views here presented are of the recently completed Melville Schweitzer residence, on the north side of Jackson street, between Laurel and Locust streets, San Francisco, Mr. Sylvain Schnaittacher, architect. The basement and first story are faced with selected clinker brick, laid in Flemish bond. The second story is of cedar shingles and the roof is of slate. The window trim and wood work are painted white.

A feature of the house is the reception hall and ingle-nook, finished in oak and having a vitreous brick fireplace.

The living room is finished in oak and the walls are hung with a deep blue tapestry. The lighting fixtures of special design are carved wood gilded and the fireplace is of Manti stone.

White enameled cedar makes an attractive dining-room, a cozy fireplace of blue marble adding materially to the cheerfulness of the room.

Reception Hall, Residence of Mr. Melville Schweitzer
Sylvain Schnaittacher, Architect

Loggia, Residence of Mr. Melville Schweitzer

Residence of Mr. Melville Schweitzer, San Francisco *Sylvain Schnaittacher, Architect*

Japanese Sitting Room, Residence of Mr. Melville Schweitzer *Sylvain Schnaittacher, Architect*

The hangings and exposed portions of the walls are also blue. The hanging lamp is carved wood and gilded.

Another rather novel feature of the house is a Japanese sitting-room the finishing of which is thoroughly Oriental, the furniture and objets d'art having been collected by Mr. and Mrs. Schweitzer during a tour of the Orient. The floor is covered with Japanese matting, especially made in Japan for this room. The fireplace is an attempt to reconcile Western ideas of comfort with the Japanese design and yet maintain the character of the room.

Adjoining the Japanese room is the loggia, which commands a superb view of the Presidio, the Golden Gate and Mt. Tamalpais and has a garden of Japanese dwarf plants.

* * *

American Stones for Interior Decoration

IT IS only in recent years that much use has been made in this country of carved stone for interior work. A few of the more notable churches had piers and clustered columns and vaulted ceilings of stone, but the number was extremely limited. Many of the most pretentious contented themselves with timber and plaster. Even the public buildings rarely adopted this most striking form of decoration. Walls would be wainscoted in marble, and marble would be used for the stairways, with bronze or iron for the balusters and wood for the handrail.

With the improvement in architectural taste that began a couple of decades ago, and with our vast growth in wealth, which enabled us to lavish far more money than ever before on our public, business and private buildings, we came to a realization that for spacious vestibules, wide corridors, stately courts and grand stairways no form of decoration was as rich and effective as carved and dressed stone. At first there was a tendency to use the French and Italian limestones that had been employed for such purposes for many centuries in Europe. For a hundred years or more, if we sought anything more massive and substantial than wood for fire-place and mantels, we contented ourselves with the black marbles of Belgium, and the black and gold and the white marbles of Italy. The first two of these harmonized well with our Colonial style of architecture, and every one can recall most artistic mantels in these materials. But the staring white Italian marble mantels seemed to fit in with no scheme of decoration. It was a decided relief when these fitments of moulded and polished marble gave place to delicate and carved creations in Caen or Istrian limestone.

With the growth in knowledge of our own native resources came the realization that in our warm, rich sandstones and limestones we had ideal materials for interior decoration. These stones come in varying tints of gray, olive, buff, pink and red, harmonizing with any scheme of decoration. They are strong and durable, and hold their color perfectly. They are capable of the most delicate and elaborate carving, and the texture is such as architect and stone cutter love. They are free working, and they always reveal the texture of the material through the chisel marks, so that they never look like mere moulded work, even when viewed from a distance.

Since this wide variety of native stone has become available, our architects have risen to their opportunities, to the vast improvement not only of our public buildings, but of our finer private residences as well.

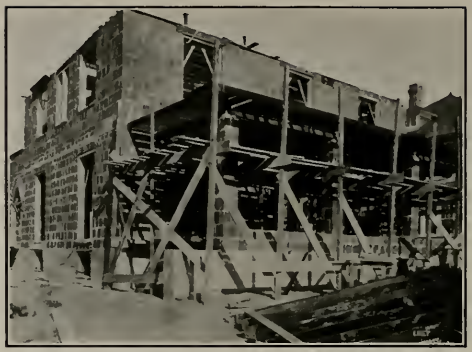
Design for a $10,000 Fireproof House of Hollow Clay Tile

Perfected House Building

INSURANCE authorities tell us that it requires about 300,000 new houses every year to supply our increase of population and 80,000 more to take the places of those that are destroyed by fire. Our people seem bent upon increasing rather than diminishing that destruction, that is so often accompanied by loss of life, too, for they keep on building houses of wood, inflammable fire-traps, most of them.

Fireproof construction has made advances, but has been applied mostly to commercial and public structures. It is pleasing to note, however, that a beginning is being made in sensible house construction. Brick is being used more extensively than heretofore and so is concrete, and lately fireproof clay hollow tile has also been used with signal success. These hollow tiles have formed the basis of fireproof construction in large buildings for the last thirty years. They are the standard system of fireproof construction and protection, but it is only within the last year or two that they have been applied to houses. In New York and Chicago and in Ohio, near the big tile factories, several of these houses have been built completely of tile, the walls, the partitions, the floors and all, and they make ideally comfortable homes and beautiful. There is no wear out to them nor repairs, they are cooler in summer and warmer in winter than any other kind of construction, no fire insurance is required and the ultimate cost is less than that of the perishable and unsatisfactory wooden house that, however, is yet so much the fashion, solely because it is the usual thing.

The accompanying views are of a tile house now being built for Mr. Heister of the firm of Heister & Milburn, architects, at Chevy Chase, Washington's beautiful suburb, a house costing but $10,000 and that will serve as a pattern or model for many homes thereabout. Several prominent Washingtonians have already planned to build tile houses this year.



A $10,000 Fireproof Tile House in Process of Erection

Concrete Residence Competition

THE one branch of concrete construction which seems to have lagged behind the others in rapidity of development is in residence construction. While considerable progress has been made in this field recently, it is nevertheless to be observed that architects and builders have rather neglected the possibilities of concrete in the building of homes, notwithstanding the fact that a concrete house offers several advantages of fireproofness, permanency and low insurance. In this connection, it is interesting to note that the Pittsburg Architectural Club has taken steps to encourage and stimulate the interest of the architectural profession in cement house construction. The club is at present sponsor for a competition for designs for a cement house and garage which is attracting considerable interest among architects throughout the country.

The competition is open to practically all the architects in the country, and prizes, amounting to $500, are offered by the Universal Portland Cement Company of Chicago and Pittsburg.

The designs will be exhibited at the Fifth Annual Art Exhibition, at the Carnegie Institute galleries, at Pittsburg, and will probably be published later in booklet form, by the cement company.

In making the award the jury will consider the artistic quality of the designs, in regard to the materials used, the excellence of the plan, and the practicability of the constructive details, and will endeavor to obtain a design in which the imagination and ideas of the designer, in regard to good architecture, are practically and successfully worked out.

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"I understand there is a county in California that would like to be annexed to Chicago."

"Why not? Must we expand entirely by annexing contiguous territory?"

Building Against Earthquake

By FRITZ VON EMPERGER.*

THE difficult problem of constructing buildings capable of resisting earthquake shocks in districts subject to them has received many attempted solutions on the part of inventors, often consisting in elaborate mechanical arrangements for isolating the building from the movements of the earth on which it rests. Apart from the fact that such mechanisms are difficult to keep in order, experience shows that the building should be connected as rigidly as possible with its foundation, and that the aim should be rather to construct a framework capable of resisting horizontal thrusts in any direction in the same way that an ordinary structure is designed to resist vertical loading. Supporting on separate feet or pillars may result in the whole load being thrown momentarily on a single support in the course of the rocking movements set up by an earthquake, especially when interfering systems of waves are produced, as is often the case. A light, rigid skeleton, firmly connected with its foundation, is the most satisfactory arrangement. It is impossible to construct a building which will be proof against the extraordinarily violent shocks which occur in great catastrophes, but the shocks which usually occur in regions subject to earthquakes may certainly be resisted. The matter is simplified if the prevailing direction of the earthquake waves is known.

Reinforced concrete is an eminently suitable material for the construction of the skeleton, having the necessary lightness and qualities of fire resistance, whilst providing a ready means of making the whole skeleton a statical whole by its monolithic character. The most rigid form to be given to the skeleton is theoretically that of a paraboloid of revolution, but the practical requirements of habitable dwellings necessarily limit the choice of the designer to rectangular forms. The simple cage-like skeletons shown in Fig. 1 are the most practical form, the vertical and horizontal ribs being thoroughly tied together; whilst the walls consist of thin reinforced concrete panels, lined with a non-conductive composition. Stairs are built up of a reinforced concrete framework with hard wood treads, and the floors preferably of reinforced concrete panels with a diagonal stiffening and a wood block floor covering.

Experiments by Omori in Japan, who subjected vertical brick pillars to rapid horizontal movements at the base, showed that in such cases fracture always takes place near the junction with the ground. This is, however, not the case with actual buildings, the strength of which is not uniform throughout their height, but diminishes upwards. Experience in Japan shows that destruction in such cases takes place at the junction of the roof with the walls, or at a point in an upper floor—that is, at the point least able to resist horizontal thrust.

The author has devised a form of construction capable of resisting the shocks experienced in such a district as that of Calabria, that is, all shocks except the very rare catastrophic earthquakes. The maximum permissible height of a house in Calabria is 10 metres (33 feet). The general mode of construction is shown in Figs. 2 and 3 (dimensions in centimetres). Frames crossing at right angles have been adopted, as sufficient strength can be secured by this means, and the difficulties of diagonal frames are avoided. The arrangement of the reinforcement is shown in Figs. 4 and 5. Each upright of the framework has four flat bars 50 x 6

*Editor of Beton u. Eisen, Vienna, in a recent issue of which this description appeared. The translation is through the courtesy of Concrete and Constructional Engineering, London.

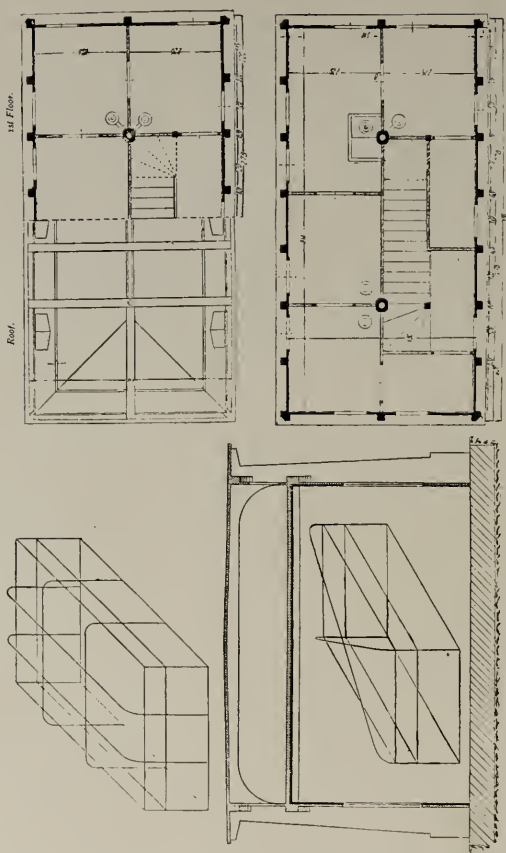

Figure 1—Sectional and Isometric Diagram of Earthquake-Proof Structures

Figure 2—Upper and Lower Floor Plan of Structures Designed to Resist Earthquake

mm. (2 in. x ¼ in.) anchored in the foundation by means of channel iron. There is no diminution in the dimensions of columns in the upper stories. The walls are of 5 to 8 cm. (2 to 3¼ in.) concrete, reinforced with rods, the lining being 3 cm. (1¼ in.) thick. Windows are built in as shown in Fig. 4. The floors are necessarily light, and a rigid frame construction has been adopted throughout.

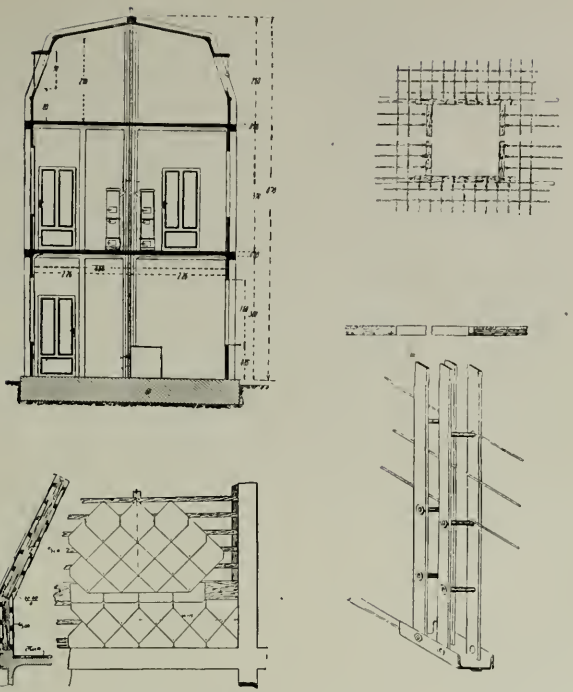

Figure 3 (left top) shows section of Building shown in Fig. 2. Fig. 4 (bottom right) is detail of Wall and Window Opening. Figure 5 (bottom left) is a detail of the Roof Construction

The author adds a complete statical computation of the roof, on the basis of the elastic theory. The framing is rigidly connected with both the walls and the upper floor, making the whole construction monolithic. The calculation is a complicated one, owing to the fact that thrusts from all directions must be taken into account. The roof must have a degree of safety equal to that of the lower part of the building, since disasters have often occurred through the roof being displaced by the shock, and falling in and crushing the lower part. The general arrangement is that of a large cage, made up of a series of frames. The filling may be either like that of the walls, reinforced concrete panels with lining, or it may consist, as in Fig. 5, of wooden laths with inner and outer covering of slabs. The chimneys are of terra cotta, built against one or more of the columns. The cost of such a building, exclusive of foundations, windows, etc., may be

taken at 50 per cent in excess of that of an ordinary dwelling house of the same size.

The author further examines the resistance to earthquake of different types of structure, and concludes by emphasizing that in any case a form of frame construction should always be adopted for high buildings in districts subject to shock.

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Wrecking a Concrete Bridge

A CONCRETE arch bridge was taken down recently in Germany. The bridge was built only eight years ago; it crossed a double-track railway line (between Weddau and Oberhausen) and was removed because the line had to be four-tracked. The span of the bridge was 56 feet, the rise 11 feet, and the width 24½ feet. The arch-ring, 16 inches thick, was reinforced according to the Monier system with two layers of round rods in both directions, 9-16-inch circumferential rods 6 inches apart and 5-16-inch longitudinal rods 24 inches apart. It was removed by dynamiting it, the work being done by a detail of pioneers from the army. The explosive was placed on the arch ring at the crown (the filling having been cleaned off in preparation). The size of cartridge is stated as 3 by 2 by 1½ inches. Eleven groups of four cartridges each were placed 24 inches apart in shallow recesses in the crown concrete, and two groups of eight against the spandrel walls, 60 in all. They were capped with earth and sod. The blast tore the structure apart at the crown, and the sides broke off at the springing; the fact that the spandrel walls failed to hold the sides up may be charged in part to the construction joints over the skewbacks. The debris, which blocked the tracks below, proved very difficult to reduce to pieces small enough to handle, and after 12 hours' work only one track had been cleared. This work was done on Sunday. The abutments were blown up on two subsequent Sundays.—(Zentralblatt der Bauverwaltung, Nov. 13, 1909.—Eng. News. Translation).

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An Architect Not Needed

Mayor Edward Schwabenland of Riverside, N. J., and Henry Tesnow, one of the most popular residents of that thriving little borough, were talking the other day on queer sayings and doings, when Eddie told of a motion that had once been made in a school board of which he was a member.

The needs of the town, Eddie said, demanded that a new schoolhouse should be erected, and after the board had discussed the question to a considerable length one of the members arose to his feet.

"I move, Mr. President," said he impressively, "that we build a new school-house on the site of the old one; that we use the material in the old one for the new one and that we don't tear down the old one until the new one is built."

"Well, what did they do about it?" smilingly queried Mr. Tesnow.

"They were a little bit slow coming around," replied Eddie, "but just as soon as they got their breath to working again they sent for an architect to figure out how the thing could be done."

"Did he find the answer?" asked Mr. Tesnow.

"No," was the chuckling rejoinder of the mayor. "He worked on it until the demijohn was empty, and then told the school board that what they wanted was a sleight-of-hand professor, not an architect."—Philadelphia Telegraph.

The Essential Qualities and Method of Application of Concrete to Timber Structures in Sea Water

By RALPH W. BARKER, C. E.*

THE principal enemies of timber structures in sea water are the limnoria and the teredo. The limnoria works at the surface of the water, and makes his attack on the outside of the timber and does not enter and live in it. Consequently, when a pile has been exposed to this insect a sufficient length of time it has the appearance, between high and low water, of an hour glass, the narrowest portion being at mean tide level where it has been exposed the greater length of time. The limnoria does not destroy timber as fast as the teredo, and his sphere of action is not so great. Also, when a pile is eaten enough by the limnoria to seriously impair its strength, the fact is obvious, which is not true of the teredo.

The teredo, the most destructive foe to timber work in sea water, works between the mud line and mean low water. He enters the timber in the form of a minute worm, making a hole in the shell of the timber no larger than a pin. After entering the wood he grows rapidly, boring his way parallel to the grain of the wood, the size of the hole rapidly increasing to accommodate his increasing size, until it is frequently one-half inch in diameter. The small hole through which the borer entered remains at its original small size and the timber, if not otherwise attacked, appears sound as ever.

This insidious enemy infests the waters of the Pacific coast in enormous numbers, and is the most destructive, by far, with which we have to contend. Untreated fir piles in the bay of San Francisco have been so riddled by the teredo in eight months' time that their bearing capacity is practically nil, and a very slight transverse stress would break them.

It is plain, from the foregoing, that the use of untreated timber for the support of structures in sea water is absolutely out of the question except for extremely temporary work.

There are several methods of treating timber for its preservation which may be divided into two classes: First, the impregnation of the wood with some chemical which is distasteful to the insects which attack it, and second the placing around the timber of something which is impervious to the attacks. The first method is very largely in vogue here, but is open to many objections, which I will not enumerate. Its principal recommendation being its cheapness.

The latter method is coming rapidly into use, and as concrete is the cheapest, most available, and most readily applied material it will probably supersede all others.

The one great requisite essential for a hydraulic cement, regardless of the special purpose for which it is to be used, and therefore embracing its use in ocean waters, is that when properly handled it shall form a strong and permanent cementive bond; that when crystallized and hardened it shall become an enduring and resistant matrix for the inert particles of sand and stone, together with which it forms an artificial conglomerate stone.

As to the type of hydraulic cement best fitted for use to secure this general essential quality of enduring cementive strength under the condi-

*Mr. Barker is assistant to State Engineer Nat Ellery and is in charge of the harbor work in San Francisco.

tions imposed, the subject has been, and still is, one of considerable question.

The two destructive influences most necessary to provide against are: First, the peculiar chemical disintegrating action of the magnesian sulphate contents of ocean water upon the aluminum compounds in the cement; second, the physical wear of the surface of concrete thus chemically affected and softened, by the abrasive action of the water of "The ever restless sea," and of the greater or less content of sand which it may carry with it.

Naturally the first endeavor has been to produce a cement so constituted that the chemical action of the sea water should be reduced to a minimum.

Basing their work upon the theory that the aluminum content of a cement could for fluxing purposes in the manufacture, be replaced by iron which is not affected deleteriously by magnesian sulphate, German makers have placed upon the market an "Iron Ore Cement" or "Erz-Cement" as it is called. Accelerated tests of this material have been made by the makers, by immersion of mortar blocks in sea water of intensified strength.

These tests as reported seem to prove that as compared with Portland Cement of the usual character, under the same conditions, the Iron Ore Cement blocks withstood the chemical action of the sea water very much more successfully.

Tests of imported Iron Ore Cement are now under way in San Francisco, comparing it under exactly similar conditions with a Portland Cement made in California. These tests have been running for only six months up to the time of the present writing, and perhaps may on that account be not exactly conclusive. The results of these tests as far as carried are as follows:

Comparison of Tensile Tests, Hemmoor Iron Ore Cement, and Santa Cruz Standard Portland Cement, Stored in Fresh Water and in Sea Water of Five Times Normal Strength.

Stored in Fresh Water.

	Iron Ore Cement.	Santa Cruz Portland.
30 days Neat	653 lbs. per sq. in.	704 lbs. per sq. in.
30 days 1 to 3 Sand	359 " " "	396 " " "
90 days Neat	825 " " "	725 " " "
90 days 1 to 3 Sand	499 " " "	465 " " "
180 days Neat	808 " " "	801 " " "
180 days 1 to 3 Sand	526 " " "	491 " " "

Stored in Sea Water, Five Times Normal Strength.

	Iron Ore Cement.	Santa Cruz Portland.
30 days Neat	853 lbs. per sq. in.	863 lbs. per sq. in.
30 days 1 to 3 Sand	343 " " "	441 " " "
90 days Neat	981 " " "	1019 " " "
90 days 1 to 3 Sand	493 " " "	508 " " "
180 days Neat	1026 " " "	1160 " " "
180 days 1 to 3 Sand	486 " " "	479 " " "

Another series of systematic experiments made with the purpose of determining the question of a resistant cement for sea water use, were begun fourteen or fifteen years ago by the German government at the instigation of "Puzzolan-Portland" cement manufacturers.

Puzzolan-Portland is a mixture of either natural puzzolan (a volcanic ash) and Portland Cement; or of artificial puzzolan (blast furnace slag of certain chemical composition) and Portland Cement.

Depending upon the chemical composition of the puzzolan, the mixture contains from 30% to 50% of puzzolan, and from 50% to 70% of

Portland. The mixture can be made after pulverization, if necessary by the engineer or contractor on the work. Preferably, however, ball-mill product of both ingredients are pulverized together in the tube or other finishing mill at the cement factory.

The result of the German government experiments at the Royal Testing Station at Berlin, carried through a fairly long series of years (the five years tests have recently been completed) seem to prove rather conclusively that under exactly similar conditions of mixture and subsequent immersion in sea water, the Puzzolan-Portland concretes showed higher strength than the pure Portland concrete in both tensile and compression tests, and that the Puzzolan-Portland concrete blocks with which the tests were made, held their original form in much better condition than did the blocks of concrete made with pure Portland, the latter having very visibly suffered from chemical action and abrasion in the sea water.

As to the comparative economical value of Puzzolan-Portland and pure Portland in the rich concretes made for the German government tests in sea water, the results seemed to prove that a barrel of the Puzzolan-Portland was equal in producing resistance to the action of sea water to two barrels of the pure Portland.

An examination of the two types of concrete blocks used in these experiments also seemed to prove true the theory of Dr. Michaelis that the hardening of the Portland Cement in the Puzzolan-Portland mixture was accompanied by a chemical decomposition in which a portion of the combined lime in the pulverized clinker was transformed into lime hydrate, and this latter in some measure at least, made another combination with the pulverized puzzolan, producing a puzzolan hydraulic cement, invulnerable to sea water.

Final corroboration of these sea water experiments and their results in this country will be awaited with great interest. At the present time, however, Puzzolan-Portland is not manufactured in the United States, although deposits of properly constituted volcanic ash, suitable for the purpose undoubtedly exist in numerous parts of the country.

With the materials heretofore at his command, the American engineer has been principally confined in sea water construction, to the use of Portland Cement.

Although disastrous disintegration has occurred in some instances, it is nevertheless true that the great mass of well-constructed Portland Cement concrete in sea water has served its purpose satisfactorily. Portland Cement concrete has the power of armoring itself against the action of the magnesian sulphates of the sea water by the formation on its exposed surfaces, of a skin or film of lime carbonate. In comparatively still waters this appears to constitute a very effective protection. In case of violent or continued abrasion of water and sand it is naturally less effective, and in exceptional cases has no opportunity to form. In these cases the calcium hydrate set free by the decomposition incident to the hardening of the Portland Cement, is washed away, leaving voids for the further inroads of the deleterious chemicals contained in the sea waters.

In selecting a Portland Cement for marine construction, for at present the American engineer is in large measure confined to choice of cements of the common type for work of this class, the ordinary precautions taken to secure a trustworthy material (i. e., careful and accurate sampling and testing) are absolutely essential. The Standard Specifications of the American Society for Testing Materials indicate the requirements admirably in the main. That the cement must be "sound" goes without saying.

Since only the very finest portion, the "float" of the Portland has cementive value, fine pulverization is essential, and a matter of much economical moment. Too slow a setting is to be avoided, and a rapid permanent hardening is of value. These, however, it is unwise to secure by the use of cements high in aluminum, since it is the aluminate content that is most vulnerable to the chemical attack of sea water.

Since the teredo works from the mud to low water and the limnoria from low to high water, it is necessary, in order to insure immunity from these pests, to protect our timber from the mud line to high water mark, and as the mud line is a somewhat varying factor it is very desirable to extend the covering to a material which is certain not to be affected by any of the influences it may be subjected to, or to a sufficient depth to preclude the possibility of the unprotected portion of the timber becoming exposed.

Three methods have been used extensively in this harbor for applying concrete to piles for their protection from marine insects and borers. Two of these methods are applicable only to new structures, before the superstructure is in place, while the third may be applied to the piles at any time.

The first method to be described covers the use of a metal or wood cylinder around the pile and filling same with concrete. This method was first employed in 1894. Steel cylinders three feet six inches in diameter were used, around a cluster of three piles. First the piles were driven in the proper locations, then the mud was removed from inside the cylinder to a depth specified. This depth is governed by conditions, and is usually about thirty feet below low water. Then concrete, which was sewn up in loose mesh burlap sacks, was placed in the cylinders in sufficient quantity to fill it nearly to low water line. This was allowed to set and the water was then pumped out and the balance of the cylinder filled with loose concrete.

This method was later cheapened by the substitution of wooden stave cylinders for the steel cylinders.

The most recent practice in this method is to use instead of a three foot 6 inch cylinder one only two feet in diameter, having a cast iron shoe in its bottom which fits as close as possible around a single pile. Rope grummets are placed around the pile and as the cylinder is driven the grummet is forced tightly between the casting and the pile thus making a tight joint which excludes the mud and water to a very great extent. What mud and water may have gotten inside the cylinder is then removed by a jet pump and the cylinder filled with concrete, same being reinforced with vertical rods held in place by horizontal bands. The latter practice gives the best results, as the placing of concrete under water, even in sacks is almost certain to cause a separation of the ingredients. The wooden cylinder is eaten away by the marine insects in a short time and if the concrete is not perfectly sound the teredo enters and destroys the piles.

The second method to be described consists in using a concrete cylinder of about 24 inches external diameter and 2¾ inches thick, and heavily reinforced. The length of the cylinder is governed by conditions as for the wooden cylinder above described, the longest used here being 34 feet. The cylinder is driven around the pile, pumped out and filled with concrete in precisely the same manner as the small wooden cylinders are used. This method gives very good results as the outer 2¾ inches of concrete of the finished job is made on the surface when it can be examined and rejected if defects appear.

The third method to be described differs essentially from the foregoing and can be applied to an old structure without removing the top work. It consists of the use of a sheet metal form having a diameter about 8 inches greater than the pile to be treated, same being made around the pile in short lengths. The bottom of the first form applied to the pile is equipped with a diaphragm which fits closely around the pile and accommodates itself to its decreasing size. This is placed around the pile and has attached to it two wire ropes from a windlass on the floor of the structure. Then a cylinder of reinforcing material is placed inside the form and it is filled with concrete. This section is then lowered into the water sufficiently to allow the next section to be constructed around the pile and fastened to the one already filled. The process is continued until the first section comes to rest in the bottom of the bay. In ordinary mud the weight of the column of concrete will force it down into the bottom a sufficient distance to insure protection.

All three of these methods give very good results. The last mentioned is the cheapest, but when it is used the pile it protects must extend up to and support the superstructure. In the other two methods the pile may be cut off at low water line and the balance of the support made a reinforced pillar getting its lateral strength from the reinforcing bars which may be made continuous for the full length of the concrete casing.

* * *

Wood Better than Stone

IT HAS been stated that the decorator has in wood an admirable material, affording in some respects more detailed scope for minute details than the sculptor finds in stone, says Percy Russell.

Carving in some form or other is about the oldest form of known decorative art.

In the mediaeval period solidity was a prime consideration in respect to furniture, generally, and this was especially noticeable in the old coffers and enormous four-post bedsteads, with their boarded tops and bottoms. Carvings about the massive pillars and the great footboards were the embellishments. It was not till much later that decorators arose who began to properly study form, proportion and outline, and then a great impetus was given by the lathe, which began to be extensively used in the thirteenth century.

Sculpture, too, in low relief made its appearance, and various classic stories, fables and poems were literally illustrated in wood and made into stories without words.

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Oakland's Million Dollar City Hall Competition

ARCHITECT John Galen Howard of the University of California, Berkeley, and who has been appointed architectural adviser in the Oakland, Cal., city hall competition, has called for the names of architects who wish to compete and if their ability and experience in important work are satisfactory to Mr. Howard, their names will be placed upon the eligible list. Not more than twenty-five, however, will be allowed to compete in addition to three architects of the highest standing who are to be especially invited and paid. The rules of the American Institute of Architects governing competitons, are to be followed to the letter. The estimated cost of the city hall is $1,000,000.

American Institute of Architects

A Circular of Advice Relative to Principles of Professional Practice and the Canons of Ethics

THE American Institute of Architects, seeking to maintain a high standard of practice and conduct on the part of its members as a safeguard of the important financial, technical and esthetic interests entrusted to it, offers the following advice relative to professional practice.

The profession of architecture calls for men of the highest integrity, business capacity and artistic ability. The architect is entrusted with financial undertakings in which his honesty of purpose must be above suspicion; he acts as professional adviser to his client and his advice must be absolutely disinterested; he is charged with the exercise of judicial functions as between client and contractors and must act with entire impartiality; he has moral responsibilities to his professional associates and subordinates; finally, he is engaged in a profession which carries with it grave responsibility to the public. These duties and responsibilities can not be properly discharged unless his motives, conduct and ability are such as to command respect and confidence.

No set of rules can be framed which will particularize all the duties of the architect in his various relations to his clients, to contractors, to his professional brethren, and to the public. The following principles should, however, govern the conduct of members of the profession and should serve as a guide in circumstances other than those enumerated:

1. **On the Architect's Status.**

The architect's relation to his client is primarily that of professional adviser; this relation continues throughout the entire course of his service. When, however, a contract has been executed between his client and a contractor by the terms of which the architect becomes the official interpreter of its conditions and the judge of its performance, an additional relation is created under which it is incumbent upon the architect to side neither with client nor contractor, but to use his powers under the contract to enforce its faithful performance by both parties. The fact that the architect's payment comes from the client does not invalidate his obligation to act with impartiality to both parties. The architect should not, without authority, assume to act as the owner's agent.

2. **On Preliminary Drawings and Estimates.**

The architect at the outset should impress upon the client the importance of sufficient time for the preparation of drawings and specifications. It is the duty of the architect to make or secure preliminary estimates when requested, but he should acquaint the client with their conditional character, and inform him that complete and final figures can be had only from complete and final drawings and specifications. If on the basis of approved preliminary sketches and specifications, definite expenditure has been mutually determined, the architect should bring his working drawings and specifications to meet such cost, provided that the client has requested no departure from the original basis of estimate, and that conditions beyond the architect's control have not arisen. If an unconditional limit of cost be imposed before such drawings are made and estimated, the architect must be free to make such adjustments as seem to him necessary. Since the architect should assume no responsibility that may prevent him from giving his client disinterested advice, he should not, by bond or otherwise, guarantee any estimate or contract.

3. **On Superintendence and Expert Services.**

On all work except the simplest, it is to the interest of the owner to

employ a superintendent or clerk of the works. In many engineering problems and in certain specialized esthetic problems, it is to his interest to have the services of experts, and the architect should so inform him. The experience and special knowledge of the architect make it to the advantage of the owner that these persons, although paid by the owner, should be selected by the architect under whose direction they are to work.

4. On the Architect's Charges.

The schedule of the charges of the American Institute of Architects is recognized as the proper minimum of payment. The locality or the nature of the work, the quality of services to be rendered, the skill of the practitioner or other circumstances frequently justify a higher charge than that indicated by the schedule.

5. On Payment for Expert Service.

The architect when retained as an expert, whether in connection with competitions or otherwise, should receive a compensation proportionate to the responsibility and difficulty of the service. No duty of the architect is more exacting than such service, and the honor of the profession is involved in it. Under no circumstances should experts knowingly name prices in competition with each other.

6. On Selection of Bidders or Contractors.

The architect should advise the client in the selection of bidders and in the award of the contract. In advising that none but trustworthy bidders be invited and that the award be made only to contractors who are reliable and competent, the architect protects the interests of his client.

7. On Duties to the Contractor.

As the architect decides whether or not the intent of his plans and specifications is properly carried out, he should take special care to see that these drawings and specifications are complete and accurate, and he should never call upon the contractor to make good oversight of errors in them, nor attempt to shirk responsibility by indefinite clauses in the contract or specifications.

8. On Engaging in the Building Trades.

The architect should not directly or indirectly engage in any of the building trades. If he has any financial interest in any building material or device, he should not specify or use it without the knowledge and approval of his client.

9. On Accepting Commissions or Favors.

The architect should not receive any commission or any substantial service from a contractor or from any interested person other than his client.

10. On Encouraging Good Workmanship.

The large powers with which the architect is invested should be used with judgment. While he must condemn bad work, he should commend good work. Intelligent initiative on the part of craftsmen and workmen should be recognized and encouraged, and the architect should make evident his appreciation of the dignity of the artisan's function.

11. On Offering Services Gratuitously.

The offering of professional services on approval and without compensation, unless warranted by personal or previous business relations, tends to lower the dignity and standing of the profession, and is to be condemned.

12. On Advertising.

Advertising tends to lower the standard of the profession, and is therefore condemned.

13. On Signing Buildings and Use of Titles.

The display of the architect's name upon a building under construction is condemned, but the unobtrusive signature of buildings after completion has the approval of the Institute. The use of initials designating membership in the Institute is proper in connection with any professional service and is to be encouraged as helping to make known the nature of the honor they imply.

14. On Competitions.

An architect should not take part in a competition as competitor or professional adviser or juror unless the competition is to be conducted according to the best practice and usage of the profession as formulated by the Institute. Except as an authorized competitor, he may not attempt to secure work for which a competition has been instituted. He may not attempt to influence the award in a competition in which he has submitted drawings. He may not accept the commission to do the work for which a competition has been instituted if he has acted in an advisory capacity either in drawing the program or in making the award.

15. On Injuring Others.

An architect should not falsely or maliciously injure the professional reputation, prospects or business of a fellow architect.

16. On Undertaking the Work of Others.

An architect should not undertake a commission while the just claim of a fellow architect, who had previously undertaken it, remains unsatisfied, unless such claim has been referred to arbitration or issue has been joined at law; nor should he attempt to supplant a fellow architect after definite steps have been taken toward his employment.

17. On Duties to Students and Draughtsmen.

The architect should advise and assist those who intend making architecture their career. If the beginner must get his training solely in the office of an architect, the latter should assist him to the best of his ability by instruction and advice. An architect should urge his draughtsmen to avail themselves of educational opportunities. He should give encouragement to all worthy agencies and institutions for architectural education. While a thorough technical preparation is essential for the practice of architecture, architects can not too strongly insist that it should rest upon a broad foundation of general culture.

18. On Duties to the Public and to Building Authorities.

An architect should be mindful of the public welfare and should participate in those movements for public betterment in which his special training and experience qualify him to act. He should not, even under his client's instructions, engage in or encourage any practices contrary to law or hostile to the public interest; for as he is not obliged to accept a given piece of work, he can not by urging that he has but followed his client's instructions, escape the condemnation attaching to his acts. An architect should support all public officials who have charge of building in the rightful performance of their legal duties. He should carefully comply with all building laws and regulations, and if any such appear to him unwise or unfair, he should endeavor to have them altered.

19. On Professional Qualifications.

The public has the right to expect that he who bears the title of architect has the knowledge and ability needed for the proper invention, illustration and supervision of all building operations which he may undertake. For that and other obvious reasons, such title should not be assumed without adequate qualifications.

Concrete for Country Use*

IN EUROPE, as well as in our Eastern states, the use of cement for industrial purposes has been investigated and employed to a considerably higher point of development than here in the West. Local conditions have possibly been the cause, the value of lumber in recent years in most localities having increased to such a point that it has been necessary to look for some other material to take its place. Conditions in this respect here in the West, although not as serious as in the Eastern states, are, nevertheless, becoming more and more alarming each day, and it is fortunate that a wise Creator has provided for just such emergencies. With the passing of the forest, a new industry, or, rather, the revival of one of the oldest ones, the manufacture of cement, has come to fill our needs and requirements.

In more than one way does the material "cement" satisfactorily replace the functions of wood. It is, with slight change of method, as easily adapted to the same purposes as wood, and further has the superior advantages of being permanent, neat, sanitary, fire and vermin proof, and improving instead of deteriorating with age, as does wood.

There is no place where cement can be used to better advantage than on the farm, although it has been the popular belief that this material is only fitted for heavy construction, such as foundations for machinery and buildings, costly bridges, and, in fact, undertakings of such a nature as to require large capital and much labor. That this belief is rapidly disappearing is evidenced by the varied and numerous uses for which cement is now being employed, and even those whose daily occupation is constantly keeping them in touch with the industry find it difficult to follow all the new developments and applications that are reported for this wonderful material.

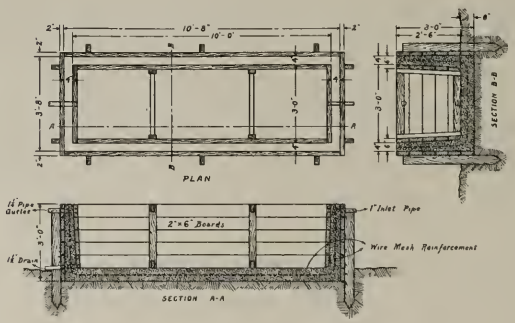
A Field Watering Trough.

Select any convenient level piece of ground. Excavate a trench 11′ long, 4′ wide and 6″ deep, tamp the ground in the bottom of this trench thoroughly. In this excavation place a strong well-braced wooden bottomless box having inside dimensions, length 10′ 8″, width 3′ 8″, depth 3″. Also construct another strong wooden bottomless box with outside dimensions 10′ long, 3′ wide, 2′ 6″ deep with sides and ends slightly tapered as shown in sketch. Both boxes should preferably be made of 2″ x 6″ or 2″ x 4″ surfaced lumber. You are now ready to mix your concrete, which should be done as follows:

To one part of cement use two parts clean coarse sand and four parts of broken stone or rock mixed to a jelly-like consistency. Place a layer of this concrete 3″ deep in the large wooden box, tamping thoroughly. On top of this place a reinforcing of chicken wire fence or any ordinary wire mesh bent up on the sides to almost the height of the side and end boards. Fill in another 3″ layer of the same concrete over this reinforcing, tamping as before, and carefully smooth the surface with a float. Now place the smaller bottomless box, after having well rounded the lower outside corners as shown, so that its top edges will be exactly 4″ distant all around from the outside box. Bore a 2″ hole from the outside through both boxes as close to the bottom as possible and place in this hole a 1½″ pipe with a valve on the outside to be used as a drain. Also near the top and on each end drill holes to take 1″ pipe for an inlet and an overflow. Fill the space

*Contributed by the Pacific Portland Cement Company, manufacturers of Golden Gate cement, San Francisco. This matter is published in response to frequent requests from country subscribers for some practical information regarding the possibilities of concrete for the farm or suburban estate. It is the first of several articles on the subject and while it may not appeal to the city architect it will doubtless be read with interest by builders and others whose work is largely in the small towns.

Concrete Watering Trough at Cement, Cal.



DETAILS - FIELD WATERING TROUGH

between the boxes before the bottom has hardened with fresh concrete of the same consistency as previously made, tamping thoroughly and working near the boards with a paddle-shaped stick to bring the finer material to the front.

After the work has set up hard the forms can be removed. This should be done with care so as not to injure the concrete surfaces.

Paint both inside and outside of the trough with a cream-like mixture of neat cement applied with a brush. The trough should not be used for at least seven days after painting, during which time it should be kept thoroughly wet and protected from the sun and wind currents in order to allow the cement to develop its strength.

In most instances all of the above material is available without having to purchase. The labor, except filling the forms with concrete, which must be an uninterrupted process, can be performed at odd intervals, which fact would make the cost of such a trough practically nothing more than the price of a few sacks of cement.

Such a tank when properly constructed will last forever, it can not rot out, is not subject to expansion or shrinkage when empty and can be depended upon under all conditions of wear, usage and climate.

The round tank is constructed in a manner similar to that above described, it being necessary, however, to make circular instead of square retaining forms.

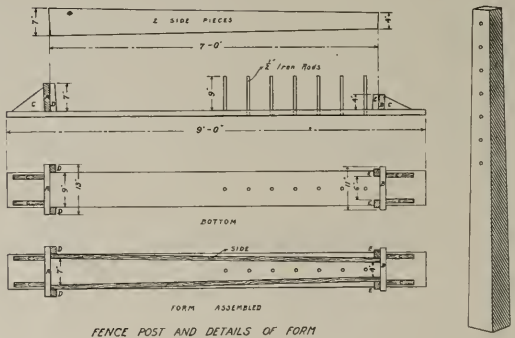
Feeding Floors.

Concrete feeding floors are, on account of their cleanliness, dryness and general convenience, far superior to wooden or earthen floors, and will in a few years pay for their cost in the saving of fodder. It is frequently the case that stock such as cows or hogs are fed in open corrals, either directly on hardened ground, or on wooden platforms. On both these types of floors waste can not be avoided, as it is almost impossible to keep their surface hard and free from dirt and mud, which comes in contact with the feed, resulting in an actual waste of a great portion of it. While this statement is not true for new wooden floors, it takes only a short time before these become as bad as earthen floors, due to rotting and the accumulation of waste under the planks, and these of necessity must therefore be replaced.

A concrete feeding floor is free from all such drawbacks, and can not wear out. It can be kept clean and sanitary under all conditions of weather and use, and is very easily constructed. It is only necessary to excavate the surface of the ground some three or four inches for the required area and by means of tampers pack and level the area thus excavated to as solid and even a surface as possible. If clay or adobe should be encountered in the excavation, this should be removed as noted for sidewalks, and a sub-base of broken rock or gravel 4″ to 6″ thick put in its place to allow for drainage. On top of the solidly packed and wetted earth or rock fill, as the case may be, spread evenly a layer of concrete 5″ or 6″ thick, consisting of one part cement, three parts sand and six parts crushed rock or gravel and mixed to a wet consistency. Tamp this thoroughly until water rises to the surface carrying sufficient cement with it to form a rough, close-grained finish of small particles without any of the larger aggregate exposed, and then rub down with wooden float, using a circular motion.

If the floor is very large it is best to carry the work on in strips not over six feet wide and the length of the floor, each strip being finished before work is commenced on the following one, the line of separation between them being maintained by side pieces similar to those used for paths and walks. A finishing coat is not necessary on feeding floors. In

Concrete Posts for Fence and Vineyard Use



FENCE POST AND DETAILS OF FORM

fact, it is an advantage to leave them rough to give the animals a firmer and less slippery footing.

Care should be exercised to give the floor sufficient slope for drainage, and this can be done in several ways. On large floors it is well to drain toward the center to a hopper, and have this hopper properly piped underneath the feeding floor to a sump tank some distance away to catch all drainage. On smaller floors the slope can all be to one side, to a trough ending at one of the corners in a basin to catch the drainage, or to be run out on the soil.

Fence Posts.

There is probably no other article made of cement that is more practical and will pay for itself sooner than fence posts. They are easily and cheaply made, never need replacing on account of rot, are everlasting, require no painting and will not burn. Post moulds are recommended and can be bought from a number of manufacturers if there is a great deal of this work to be done, but for small jobs home-made moulds will answer all requirements. These moulds should be for ordinary posts 7″ square at the bottom and 4″ at the top and have a length of 7′. The sketch shows one way of making such moulds. On a smooth plank 9′ long and 9″ or 10″ wide nail two end pieces, A and B, each one foot from the end of the plank. Slope these from each other slightly and brace with triangular pieces C-C. On A nail two vertical 1″ x 2″ pieces D-D so that they will be 9″ apart and similarly on B nail two pieces E-E 6″ apart. By placing one of each of the side pieces which should be made of 1″ or ⅞″ surfaced lumber against the strips D and E, a mould is formed that will give the shape of the post above described. Concrete posts should be reinforced, for which twisted or barbed fence wire is to be recommended. These wires should be 6′ 6″ long and put in place as the mould is being filled, one being located in each of the four corners one inch from the faces of the mould. Holes should also be provided in the posts for fastening the fence wire, the number and location of the holes depending on the fence being used, and this having been decided on, drill ½″ holes in the bottom board the proper distance from the top and before filling in the concrete place ½″ iron rods 9″ long vertically and well greased in these holes. These rods should be removed before the cement sets hard or from six to eight hours after moulding. Concrete for posts should be made of one part cement, two and one-half parts of sand and five parts of rock or gravel that will pass a ¾″ screen. In filling follow the same instructions as given for hitching posts, but it will not be necessary to let these fence posts remain in the moulds as long. This fence post mould is made to be used over and over and after twenty-four hours the post should be hard enough to remove the form from it. To do this place a 1″ x 12″ plank 9′ long called a pallet, on top of the mould and post and by pressing this plank and the bottom board together turn the mould over. The bottom of the mould can now be carefully lifted off and the sides removed. The post, however, should not be handled until it is at least seven or eight days old and during this time should be kept wet and protected from the sun. The mould, however, can be immediately cleaned after being taken from the post, and put together again to make another post.

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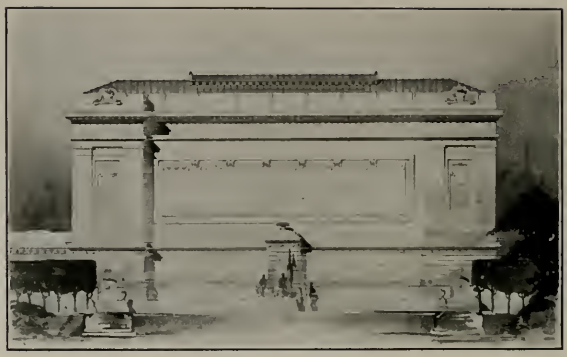
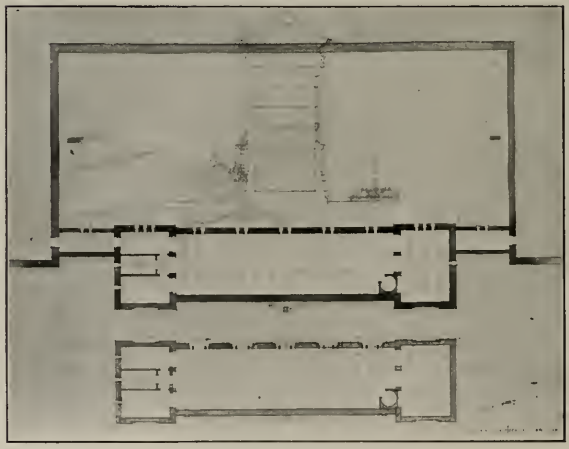
* *

"I thought," said the inspector, "you reported that this building was provided with a fire escape."

"It is. There's a room on the nineteenth floor that is used by a very devout little band of people as a church."—Chicago Record Herald.



Plan Problem: "An Archive Building."
Louis Schwartz, Seattle



Floor Plan, "An Archive Building."
Louis Schwartz, Seattle

ARCHITECTURAL LEAGUE OF THE PACIFIC COAST (Official)

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Education Committee,
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DAVID J. MYERS, Seattle, Wash.
MYRON HUNT, Los Angeles, Cal.
ROBERT FARQUHAR, Los Angeles, Cal.

NOTE.—The members of the Jury are also members of the Education Committee.

NEXT CONVENTION—LOS ANGELES, CAL.
NEXT EXHIBITION—SEATTLE, WASH.

RESULTS OF COMPETITION WORK FOR JANUARY-FEBRUARY

Student Work.—All mentions are credited by the Society of Beaux Arts Architects, New York. First mentions and medals must be confirmed by the New York Society before being credited by them.

Order Problem: Subject, "A Loggia."

Name.	Award.	Atelier.	City.
Edward Flanders	Mention	S. F. A. C.	San Francisco
Louis Rosenberg	Mention	Portland A. C.	Portland
William D. Sherman	Mention	Brown	San Francisco
M. M. Marston	Mention	Brown	San Francisco

Plan Problem: Subject, "An Archive Building."

Louis Schwartz	Mention	S. A. C.	Seattle
E. R. Williams	Mention	S. A. C.	Seattle
George E. Conrad	Mention	S. A. C.	Seattle
T. Bearwald	Mention	S. F. A. C.	San Francisco

Atelier Progress on the Pacific Coast

AS THE cities of the Greater Northwest expand and become of great commercial prominence, it is of the utmost importance that the study of the fine arts be fostered and encouraged, and more especially just at this time the study of the most useful of the fine arts, and the finest of the useful order—architecture.

The Seattle atelier, recently instituted, is one of four on the Pacific Coast; the others being at Portland, San Francisco and Los Angeles. They

Order Problem: "A Loggia."
William D. Sherman, San Francisco

are all founded on broad practical lines and are being developed in a substantial manner under the direct surveillance of the Society of Beaux Arts Architects of the United States.

Problems are published periodically by the society and include "plan-projects" and ten or twelve hour "esquisse-esquisses," or sketches, in both class "A" and "B," and "archaeology" problems of about a week's duration.

Until this year the work has been forwarded to New York city for judgment, but hereafter it will be judged in San Francisco on the same lines as in the East and under the auspices of the Architectural League of the Pacific Coast.

Much spirit is shown and is necessary in the working up of these problems. It is both an interesting and instructive sight to see the hustle and enthusiasm shown during the "charette" or last "spasm" of work on a "plan-project." The idea of finishing up in good style and on time is all that occupies the mind of the competitor and in his feverish haste to do so, much good-natured "knocking" is permitted.

Two evenings in the week are taken for criticisms by the patron and assistant. There are also other criticisms ventured by the students of each other's drawings, no pains being taken to put them in a diplomatic way, and it is from these frank opinions sporadically expressed that much benefit is derived.

Rare opportunities for free-hand work are also afforded, but not too much can be attempted because of the limited time; the hours of work comprising the evening and other spare moments.

The atelier in general, stands for all that is highest and best in architecture and in fostering that spirit of work and enthusiasm so necessary for the accomplishment and realization of the work outlined. The study of architecture is one of the most broadening of subjects and the atelier affords the draftsmen of the city, and any others interested, a fine opportunity to expand and grow and to do something.

Modern Veneering.

HARDWOOD trees, such as the oak, the walnut, and the ash have been made more valuable in modern days by the invention of veneering machines, which slice up the logs into a uniform thickness of less than one-twentieth of an inch. Veneering is not a new art, but in early days it was all hand work, and the process was slow and laborious.

Some of the old furniture of Colonial days shows how patiently and accurately the first American cabinet-makers worked; but as a rule solid wood furniture was preferred and manufactured.

In veneering of today the several layers of veneer are glued on the surface with the grain running in opposite directions. This gives a firm, substantial finish, which will rarely warp in hot or cold weather, or swell or crack. Heavy mahogany or oak doors are inconvenient to handle, but by making the doors of light wood and veneering them on the outside we have handsome doors that are easy to handle, and which never warp and sag. Altogether, the veneer is one of the greatest improvements in the wood working industry of the day. Without veneering machinery, it would be impossible to place fine cabinet articles within the reach of the multitude.

Parlor and ornamental furniture and cabinet pieces, with handsome veneered surfaces, appear in nearly all of our homes. The very best of the oak, the walnut and the ash trees are selected for veneering. Only the poor, coarse and knotty logs are turned over to the manufacturers of the cheaper articles. A large walnut tree, with a perfect grain, is worth a good deal of money, for it can be made into hundreds of feet of veneer.

The veneering machines are of two kinds—sawing and slicing. The former was at one time considered the best, and people demanded only sawed veener for the choice furniture.

Expert woodsmen are traveling through the great woods all the time in the interests of the veneering companies, and when they find a handsome hardwood tree they buy it. Sometimes it is found in the heart of the woods and again on some lonely farm or in the dooryard of a small country home. If it is large, straight and perfect in grain, ten times as much will be offered for it as it would be worth for ordinary lumbering purposes.

These perfect specimens of hardwood trees are then cut and trimmed, sawed into convenient lengths, peeled and even split. The logs are shipped to the factory in this rough condition, sometimes 13 to 20 feet in length. The first process is to cook them. This is done by plunging them into a vat of hot water or steam, where they are left until they become pliable.

When properly cooked they go to the veneering machines. These either slice or saw the logs into slabs from one-tenth to one-thirtieth of an inch in thickness.

Next it is hardened or seasoned by steaming, which takes from one to two days. When it has been properly seasoned the moisture is all extracted from it, and it is strong, tough and elastic.

The art of the cabinet workers is skillful and cunning. They lay the veneers on so that no joints are visible, and by running the grain of one layer opposite to that of the next they toughen and harden the surface so that it rarely warps or shrinks.

The grain of the veneers comes out better than solid wood, and the surface will take a much higher polish, while strength and durability are remarkable, considering the built up character of the wood.

Among the Architects

American Institute of Architects

(ORGANIZED 1857)

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Architectural League of the Pacific Coast

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TREASURER.....JOHN G. WILSON

St. Louis Architect Likes Los Angeles

William S. Eames of the firm of Eames & Young, architects, of St. Louis, is in Los Angeles to spend several months as the guest of Architect A. F. Rosenheim. Mr. Eames was accompanied from St. Louis by Mr. Rosenheim, who went there a fortnight ago to be present at the celebration of the eightieth birthday of his mother.

"Los Angeles is one of the most interesting cities of the country from an architect's point of view," said Mr. Eames in an interview. "This is particularly true of the residence section, where there is a greater and more pleasing variety of architecture than in any other place I have ever visited. There is an absence of the formality and monotony of styles so conspicuous in the larger cities of the East. The houses are not crowded together, and there is an airiness and gladsomeness in their appearance that is most attractive. Then the beautiful lawns and gardens and the semi-tropic vegetation give them a setting which is not seen elsewhere.

"From an architectural point of view the business buildings of Los Angeles

are more imposing and attractive, too, than in any city of the Middle West, with the exception of Chicago. I speak with special reference to cities with which I am familiar, notably St. Louis, Kansas City, Omaha, St. Paul and Minneapolis. There is not the bustle and activity in those cities that is so conspicuous here. I note with great interest the signs of rapid growth and development, too."

Before returning to the East, Mr. Eames will visit the customs house at San Francisco, planned by his firm.

Personal

Architects Sutton and Weeks have dissolved partnership, as Mr. Sutton has removed to Hood River. Mr. Weeks retains the offices of the firm in the Mutual Bank building, San Francisco, and will carry on the business under the name of Charles Peter Weeks.

Architects McCall and Wythe of Oakland have dissolved partnership, but each retains offices in the Central Bank building, as formerly.

Petterson & Schmidt, engineering contractors, have opened an office in suite 646 Pacific Electric building, Los Angeles. The firm is composed of H. A. Petterson, for three years connected, chiefly in field work, with the Los Angeles Aqueduct project, and A. A. Schmidt, who leaves the Los Angeles city water department, where he has served for some time.

Withey & Davis, architects, are one of the latest additions to the profession in Los Angeles. The firm has opened offices at 1126 Story building. H. F. Withey, before coming to California four years ago, was with Little & Brown, architects, in Boston and Washington, D. C. In Los Angeles he has had experience in all classes of work with Parkinson & Bergstrom and with Robt. D. Farquhar. Mr. Davis was the editor of the Year Book of the Architectural Club, issued during the last exhibition.

San Jose Elks' Building

A committee has been appointed by the San Jose Lodge of Elks to raise funds for a $75,000 Elks' building. Bonds of $100 each are being subscribed by members, and that a building will be erected this spring is practically assured. The present Elks' home, the old First Methodist church, will be demolished, and a building, probably four stories in height, will be erected, with stores and offices, in addition to spacious club rooms, hall, etc. It is likely that the architect will be selected by competition from three members of the lodge, Wm. Binder, Wolf & McKenzie and Theo. Lenzen. L. M. Simonsen of 7 West Santa Clara street, San Jose, is chairman of the Elks' building plan committee.

"A new arrival, Your Majesty, who says he was a building contractor on earth."

"Ha! ha! Put him in one of the cells marked 'absolutely fireproof,' and let it burn slowly."

The Panama Exposition

The architects of San Francisco have taken a deep interest in the plans for the big Panama exposition. It is felt that one of the main considerations should be the general style and grouping of the buildings. In this the local architects will be prepared to assist.

The exposition officials are in receipt of a letter from the San Francisco chapter of the American Institute of Architects, suggesting the conference and naming a committee to act. The letter follows:

"The San Francisco chapter of the American Institute of Architects would kindly request the privilege of presenting before your committee certain matters of information concerning the forthcoming Panama-Pacific international exposition. For this purpose the following committee has been selected, and it would ask that as early a date as possible be fixed for the meeting: Albert Pissis, John Galen Howard, Clarence R. Ward, Matthew O'Brien, W. B. Faville, William Mooser, Louis C. Mullgardt, William Curlett and Sylvain Schnaittacher."

Odd Fellows' Home Near San Jose

A competition is being held for plans for an Odd Fellows' Home to be built on property owned by the state organization in Santa Clara county. There is about $90,000 available for one or more buildings. It is understood that six architects are competing for the work, among the number being G. A. Dodge, Foxcroft building, San Francisco. The buildings are to be of frame construction.

Santa Cruz Bank Building

Architects Ward & Blohme of San Francisco have made plans for extensive alterations to the Bank of Santa Cruz County. The front will be of stone, brick and terra cotta. An entire new bank interior will be put in, including screen and counters. The entrances will also be changed.

San Francisco Chapter, A. I. A.

A special meeting of San Francisco Chapter, American Institute of Architects, was held at Tait's Cafe on Thursday evening, February 17, with an attendance of twenty-three.

The principal event of the evening was the announcement that the American Institute of Architects had voted to hold the next annual convention in San Francisco.

Reports were received from the various committees and resolutions which had been prepared upon the death of Mr. Chas. Follen McKim, were adopted by a standing vote.

Correspondence was had with the Panama Pacific International Exposition Committee relative to meeting a committee from the Chapter.

Messrs. Houghton Sawyer, Milton Lichtenstein, Chas. C. Fry, Henry C. Smith and Louis Mastropasqua were unanimously elected to membership in the Chapter.

A discussion as to the new building ordinance with reference to lot areas for flats, resulted in instructing the Chapter committee to recommend that 90 per cent of corner lots and lots running from street to street be built upon and 85 per cent of inside lots less than 100 feet in depth.

The San Francisco Chapter was invited by the Southern California Chapter to a joint meeting at Los Angeles in April for the purpose of taking action on the Burnett Tenement House Law. The invitation was accepted and no doubt a large delegation will visit the Southern city from San Francisco.

Good Architecture in Tenement Building.

At the last annual dinner of the New York Chapter, A. I. A., President Arnold W. Brunner made two announcements of much importance to the profession.

The Chapter, he stated, had decided to offer two medals to be awarded respectively to the owners of the best tenement house and the best apartment house built during the present year.

In bestowing these medals the chapter hopes to encourage the owner to cooperate with the architect in securing buildings that will present "expression and charm" architecturally. As the movement is along the line of the improvement of street architecture, the buildings are to be judged solely from the merits of their facades, and not with reference to their interior planning.

Mr. Brunner's second announcement was that Mr. Pierre Le Brun had given the sum of $12,500 as the basis of a fund for a traveling scholarship, the income to be applied toward the expenses of students traveling abroad under the patronage of the Chapter.

Plans for San Francisco's Convention Hall.

Prospects for a convention hall for San Francisco have materially brightened the past month, the promoters having secured a satisfactory option on the old St. Ignatius college site at Hayes, Grove and Franklin streets.

Former schemes for a public hall in San Francisco fell through largely because of the fear that it might be managed by one clique. Opinion was further divided as to whether the hall should be owned by the city or an association of citizens. In the new plan the people subscribe for stock at $1 a share. Not until the list reaches the $500,000 mark is the collection to be made. Then the subscribers are to elect their own board of directors, who will go ahead with bonding and building the hall, a clause in the incorporation papers reserving the city the right to buy the hall at any time it wishes.

Edward F. Foulkes, the architect, has made a thorough study of all the large halls in this and foreign countries and has improved upon the best features of each. All construction is to be fireproof and quakeproof.

The design is for an imposing public building 275 by 193 feet. The arena would be equal to anything from an auto show to a circus. For conventions the hall could seat easily 15,000 persons. The style is the Italian renaissance.

For the purposes of opera, one-half of the auditorium would be used. The proscenium arch would be lowered from the ceiling and the balconies at the side swung in at the stage end so as to cut out the unnecessary space that would hurt the acoustics. This is done successfully at St. Paul. The arena floor below is removed by sections, leaving the slanted theater floor beneath necessary for the vision.

Engineers and Architects.

The annual meeting of the Engineers and Architects' Association of Southern California was held in February. In the absence of Acting President A. F. Rosenheim, who was unexpectedly called to St. Louis, his former home, Mr. F. D. Hudson was chosen chairman. Since the last annual meeting the membership had increased by thirty active and one associate members, bringing the total membership to 194 in good standing; this is believed to make the association the largest organization of its kind in the country. During the year one member, Mr. R. A. Crawford, was placed on the roll of the deceased, two sent in resignations; one was elected to honorary membership, Captain A. A. Fries, the retiring president; eight have removed to unknown locations and nine have sent in during the year no responses to notices. The finances were reported in excellent condition, there being $146.80

in bank at the first of the year, no bills payable and bills amounting to $91 receivable.

The election of officers resulted as follows: President, A. F. Rosenheim; first vice-president, Homer Hamlin; second vice-president, F. D Hudson; directors, T. D. Allin, S. R. Burns, John Parkinson, Samuel Storrow.

The following members, comprising the entire list of candidates published last week, were announced as duly elected members: John Austin, Ralph Bennett, L. G. Camp, F. W. Crocker, R. L. DeCamp, C. K. Fox, A. H. Hand, G. W. Harding, G. S. Hinckley, L. M. Lawson, B. W. Matteson, G. C. Munoz, R. W. Stewart, G. W. West, W. A. Wilgus, Wilkie Woodward.

The Seattle Architectural Club.

The Seattle Architectural Club has just closed the second year of a successful existence. It was two years ago, this month, that the interested architects and draftsmen of Seattle met and organized for the purpose of getting into closer touch with one another, for maintaining the traditions of the profession and fostering the spirit of good fellowship in its social and educational activity.

The Craftsman Club was the progenitor of the Architectural Club and brought to it some strength in membership, which now numbers about fifty active professional men and a good backing of associate members among the editors, engineers, contractors and material men of the community.

Perhaps the most important work of the club is educational, and this is undertaken through an atelier within the organization, which follows the system laid out by the Beaux Arts Society of New York, and under the direction of the Pacific Coast League. The work done in this atelier deserves special commendation, as the programs are those issued by the Beaux Arts Society, and the results of the work, as compared with that done by the New York members, show that there are men here of equal skill with those in the East.

The Architectural Club has in charge the annual exhibition of architectural work, to be held next month in the library. This exhibition was formerly held under the auspices of the Washington State Chapter, but since the formation of the Architectural League of the Pacific Coast it has been deemed wiser that, in Los Angeles, San Francisco, Portland and Seattle (the cities comprising the league) this be turned over to the architectural clubs as being properly their function.

The preliminary work of collecting the exhibits and arranging a hall for their display is now in the hands of the collection and the exhibit hall comittees, the former consisting of Chas. H. Alden, Stanley Warner, J. W. Wilson, and Frank L. Baker; and the latter of Frank L. Baker, Chas. G. Badgley and Louis Svarz.

Burnham and the Panama-Pacific Exposition

Friends of Architect D. H. Burnham are using his name in connection with the appointment of a supervising architect for the proposed Panama-Pacific Exposition to be held in San Francisco in 1915. Burnham recently paid a visit to San Francisco, and while in the city was entertained at the Pacific Union Club, of which his local manager, Willis Polk, is a prominent member.

Burnham is said to be familiar with the topographical features of San Francisco. He has stated repeatedly that San Francisco would lend itself to artistic adornment more readily than any other metropolis in the country. For nearly a year his representative occupied a studio near the summit of Twin peaks, studying constantly the physical aspects of the peninsula.

Although Burnham has expressed no preference for any particular site, it is known that he is strongly impressed with the possibilities of the Lake Merced ranch. The wooded hillsides, the beautiful body of water and the gentle slopes have appealed with special force.

Hayward Bank Building

The plans of Architects McCall & Wythe of Oakland for a bank building for the Farmers' & Merchants' Bank of Hayward have been accepted in competition with drawings of a half dozen San Francisco and Oakland architects. Working plans have already been started, and it is hoped to let contracts before the spring season is very far advanced. The building will be two stories and basement, and will have a steel frame with concrete foundations, brick walls, faced with pressed brick and terra cotta. The banking quarters will be on the ground floor, with a large reinforced concrete vault in the basement. There will be offices on the second floor. The banking rooms will be finished in hardwood, marble and tile, with bronze counter and screen. The building will cost $30,000.

Los Gatos Hotel

Architect J. W. Dolliver of San Francisco is completing plans for a handsome hotel building, two stories and basement, to be built on the Mission style of architecture, at Los Gatos. There will be about 100 rooms, single and en suite, and the interior will be finished in a first-class manner, hardwood, tile, marble, etc., being used. About $135,000 has been subscribed by San Francisco and eastern capitalists, which makes the erection of the building a certainty.

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The sanitary provisions of buildings of the less expensive type are being given unusual attention just now, due to some extent to more rigid sanitary requirements on the part of municipal officials. The movement is a splendid one, for there is no good reason why the occupants of the so-called cheap apartment or tenement house should not enjoy the same disease preventive measures, as the aristocratic tenant of the fashionable apartment hotel. Public opinion no longer sanctions the crowding of human beings into the least possible space and providing them with the fewest possible elements of comfort. The time is apparently near at hand when the average tenement-house dwelling will not be less healthful as a habitation than the high-grade apartment house. It may be constructed of cheaper materials and be somewhat restricted in size, but it will undoubtedly provide the essentials to health, in the form of light, air, and adequate sanitary equipment.

Better Sanitation For Apartment Houses.

Probably every architect who has had experience in the planning and erection of business buildings realizes how thoroughly the matter of cost dominates the mind of the client. With the average investor the question seems to be, what is the least cost per cubic foot at which a structure capable of sustaining the contemplated load per square foot, with necessary inclosing walls and some provision for heat and sanitation, can be erected. Questions of design are of some interest perhaps as affecting appearance and the possible value of the property if a sale is undertaken, but if the architect suggests any degree of refinement in the equipment, or equipment in addition to the most meagre apparatus intended to perform the functions indicated above, he is very promptly informed that the rental per square foot could not be increased thereby, and hence the mat-

ter must be eliminated from any further consideration.

That loft buildings used for manufacturing purposes where large numbers of people are employed should contain provision for adequate ventilation there is little question, but that few of them are thus equipped is equally obvious. It is true that certain provisions for the ventilation of buildings of this class have been contemplated, and even made a requirement of law in some sections of the country, but yet the practice of providing anything like sufficient fresh air to conserve the health of employees in the average manufacturing or commercial building is far from general.

Accident Liability

The subject of accidents and accident liability is receiving more attention from contractors, builders and manufacturers than ever before. Minnesota is to have a comprehensive system of accident compensation, based in part upon the best working systems of some of the countries of the old world, to the end of averting the present economic waste, as well as distributing the cost directly instead of indirectly and somewhat uncertainly as is now the case. This is an advance which is naturally looked forward to, as a future probability. And what is true of Minnesota may be anticipated to become true of other states as well, although it is likely that there will be a number which will await the outcome of the Minnesota experiment, for such it will certainly be, if the legislation is passed as is expected. In the meantime, contractors and employers of workmen, where the occupation involves more or less hazard, will do themselves and the bonding companies and all concerned a favor if they will insist upon a more explicit and comprehensive report of any and all accidents which may occur. That a firm is bonded, and the bonding company has to look after the matter, is not sufficient. The employer should show the personal interest in the matter which is claimed to be eliminated by having a bonding company carry the risk. He should want and require and demand that any accident shall be covered in detail as to the manner of occurrence, the extent of the injury apparent at the time, the witnesses of it, the remedies or reliefs applied and all about it. The witnesses should be required to make out and sign an immediate account in detail of all that they saw and knew at the time of the accident. With this done, the employer may feel that he is prepared to defend an action brought against him later on, and he is also equipped to locate the possible cause of the accident, and to determine whether or not his orders regarding caution and diligence against accidents have been observed.

Jacob Lenzen

Jacob Lenzen, architect, died at his home in San Jose February 25, after an illness of several months. Mr. Lenzen was a native of Germany, and was 78 years of age. The family moved to San Jose in 1862. He designed practically all the early business buildings in the Garden City, many of which are still standing. His work included the old State Insane Asylum at Agnews, Hotel del Paso Robles at Paso Robles, County Hall of Records, St. Joseph's College, the Dougherty, Alice, Letitia, Archer, Rucker, Rea, Sweigert and Theater buildings, all in San Jose; the Park hotel at Alameda, the Flood residence at Menlo Park and the Bank of Hollister.

Mr. Lenzen was a Republican, and for several years served the city of San Jose as Building Inspector. A brother, Theodore W. Lenzen, an architect practicing in San Francisco, survives him.

William T. Comstock

The architectural profession has lost a man of much usefulness in the death on January 16th of William T. Comstock, publisher and author. In 1882 Mr. Comstock founded an architectural monthly, "Building," later known as "Architecture and Building." This was the second architectural publication to be started in the United States. Since 1899 the paper has been known as the Architects' and Builders' Magazine. Mr. Comstock was 68 years old.

HEATING AND LIGHTING

Vacuum Heating for Homes

By George D. Hoffman
In The House Beautiful

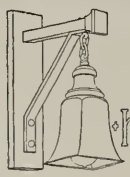
THE writer recently attended an exposition of machinery and devices especially interesting to railroad men and as he wandered through the exhibition hall, the thought kept occurring and recurring to him, "How great are thy works, O man!" Wonderful machines there were, and marvelous, and apparently impossible results were accomplished by the touch of the expert's finger. But, marvelous as the exhibition was to the ordinary observer, it was commonplace and ordinary to the man in that particular line, because all the exhibitors were doing was utilizing some simple or natural force that has been existent since the world began. The philosopher of old who exclaimed, "There is nothing new under the sun," voiced a truism that is still a self-evident fact. The forces that moved the world's machinery were the same yesterday, are the same today and will be the same as long as the world exists. What man has done, is doing, and, we hope, will continue to do, is to make these forces subservient to his will.

But the layman whose field of endeavor lies outside of mechanical lines, as well as the man whose efforts are in one channel, is apt to overlook the fact that man's effort is not confined to any one particular field, but is universal.

In the line of heating, for instance, the same keen, incisive thought has been expended, with the result of securing for the user of an apparatus which distributes its heat through various rooms and apartments from one central source, maximum service for a minimum cost. Along the line of radiator heating, especially in the direction of low pressure steam heating, tremendous strides in the line of progress have been made within the past five or six years. It is a very common thought among many that the use of a steam heating apparatus is necessarily attended by noises of various kinds in the pipes and radiators, and also by the greatest of all evils, viz.: overheating in mild weather.

With a poorly and improperly installed system of steam heating these theoretical objections to a steam heating apparatus are very apt to prove actual objections, but with a steam heating apparatus installed in a proper mechanical manner in accordance with the latest thought on this subject, all possible theoretical objections vanish into thin air in face of the ideal service obtained from this system of heating.

The goal sought by all heating systems is noiseless service and economy of fuel, combined with heating comfort; that is, heat just right in the living rooms. The two principal causes of fuel waste, particularly in connection with a steam heating apparatus as ordi-



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narily installed, are overheating in mild weather and the exhaustion of fuel gases at too high a temperature through the chimney. All this is because of the limited range of temperature within the apparatus. The water in the boiler must be heated up to 212 degrees before you generate any steam and get any heat upstairs, thus limiting the range of temperature within the apparatus to temperatures above 212 degrees.

Custom as well as comfort has decreed that 70 degrees Fahrenheit is the proper degree of heat to be maintained in human habitations during the winter months. The amount of heat required to maintain this 70 degrees depends wholly on the heat loss caused by the difference between the inside and the outside temperature. The outside temperature is a fluctuating one, while the inside is (or should be) fixed (70 degrees). To maintain this fixed inside temperature against the fluctuating outside temperature necessitates a fluctuating or flexible heat supply, and the more flexible or more easily controlled the heat supply is, the greater the economy possible in the apparatus supplying the heat.

During the past six years it has been demonstrated by the advanced thought of heating engineers that it was possible to obtain this desired flexibility of heat service within the apparatus by equipping the ordinary low pressure steam heating apparatus with appliances designed to prevent the return of air in the apparatus after it was once gotten out. It is a well known and scientific fact that air has weight and gravitates towards the earth's surface the same as any other body, its weight being 14.7 pounds at sea level. It is this air pressure that prevents water from boiling or vaporizing into steam at temperatures below 212 degrees. If, therefore, this air pressure is removed from the water, it is possible to vaporize the water at temperatures as low as 98 degrees, which is the true boiling temperature of water under complete vacuum, or under complete relief from air pressure.

Steam is water in a gaseous state occupying a space 1700 times greater than the water from which it emanates. Steam and air, being of different density, will not mix, and when water expands into steam in a steam heating apparatus, there is necessarily a pushing and crowding of the air in the apparatus into the pipes and radiators as the pressure increases. In order, therefore, to permit the steam to circulate into and through the radiators, it is necessary to supply or provide an outlet for the air. This outlet is generally designated as an air valve, and in approved systems as ordinarily installed this valve permits the escape of air but automatically prevents the escape of steam. When the air has been entirely expelled and the system is full of steam the apparatus is giving its maximum service unless high

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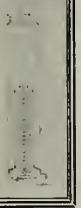

pressures of steam are carried. It might be well to state at this point that pressure of steam and temperature of steam travel together, there being an approximate temperature increase in the steam of 2¾ degrees for every pound of pressure added. The range of temperature within the heating apparatus, as ordinarily installed, is therefore limited to the range of pressure carried, and this range of pressure is generally so narrow that the radiator temperature may be considered as fixed.

Since it is air pressure that prevents the vaporization of water at temperatures below 212 degrees, it follows as a natural sequence if we can prevent the return of this air pressure to the apparatus when the gauge indicates pressure below that of atmosphere, that we can range the radiator temperature within the apparatus from 160 degrees Fahrenheit to 230 degrees Fahrenheit, or from 20 inches of vacuum to 6 pounds pressure above atmosphere. This system of heating is commonly designated as the combined low pressure and vacuum system of steam heating. This range of temperature within the apparatus puts within the control of the operator a flexibility of heating service that is possible with no other system of heating.

The supreme efficiency test of any heating system is the prompt response to a demand for heating service. "Heat service on tap" is the slogan of vacuum heating. The operator desires "more heat," turns a valve or damper and the radiator temperature almost instantly rises. He reverses the demand, and almost as promptly the heat diminshes. The intelligent operator, therefore, has in connection with a combined low pressure and vacuum system of steam heating, always at his command just the required service.

The principal cause of fuel waste, particularly in connection with steam and hot water systems as ordinarily installed, is overheating in mild weather. The flexibility of service possible in connection with vacuum heating is not only conducive to the comfort of the user, but it also minimizes the overheating evil. The resultant fuel economy thus effected is so marked as to make a vacuum system of heating commendable from the point of view of cost maintenance. Maximum service in return for minimum fuel and labor expenditure seems almost paradoxical, and yet it is a fact that this result is easily maintained in vacuum heating. The requirements, therefor, may be briefly summarized as follows:

1. A properly designed steam heating boiler has a maximum amount of heating surface combined with a minimum water capacity.

2. A boiler so constructed is necessarily supremely sensitive to heat changes of fire, and when such a boiler is installed in connection with a vacuum

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system of steam heating, the slightest change in fire temperature results in a corresponding change in steam temperature in the radiators.

3. A steam heating apparatus properly equipped with vacuum appliances to seal the system against the ingress of air enables the operator to circulate steam throughout the apparatus at temperatures ranging from 160 to 230 degrees. The fluctuating outside temperature can thus be easily met by a fluctuating radiator temperature which insures a fixed and constant indoor temperature.

Although the vacuum system of steam heating is approved by advanced heating engineers, the fact that its cost is a little more than the ordinary low pressure steam system deters many from advocating its use. The consumer, however, is directly interested in demanding the installation of this latest and most approved system of radiator heating. The resultant fuel economy, combined with the flexibility of service, insures such dividends in saving of fuel cost, and added heating comfort, that the additional first cost is soon fully repaid, while the benefits continue as long as the building stands.

Architecture and Illuminating Engineering.

While we have discussed this subject in its various phases several times before, says the Illuminating Engineer, the last word has by no means been said, nor will it have been said until the profession of illuminating engineering is as fully recognized by the architectural profession as is electrical engineering or construction engineering.

We laid down the proposition in our last issue that if the illuminating engineer expected ever to be thus recognized he must show his faith by his works. To this end two conditions must be observed: first, the illuminating engineer must be an engineer in fact, as well as in claim, i. e., be capable of producing the most satisfactory illumination for a given purpose at the minimum of expense; and second, he must not assume to dictate or advise beyond the limits of his technical knowledge and skill. There is no denying the fact that these two conditions have often been transgressed in the past. In many cases those have assumed to give professional advice on illuminating engineering who had no valid claims to either special technical knowledge, skill, experience or judgment in the matter. Such unfounded claims have been put forward from a number of causes; sometimes for the purpose of selling some particular lighting device, at other times to promote the interests of the company furnishing the illuminant, and again from mere over zealousness on the part of those who thought they had found a royal road to a profession. In rejecting such claims the architect was acting within his rights and fulfilling his duty to his clients.

It does not follow, however, that because some have assumed the title of

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illuminating engineer who had no just claims to it, that there are no illuminating engineers. Even with all the precautions thrown about the title by legal enactment, there are still many "quacks" ready to give worthless advice under the professional title of the physician. An architect can no more consistently reject illuminating engineering in toto than he can reject any other of the branches of engineering because there are incompetents among those practicing it. While there is much yet to be learned on the subject of illumination, and while even the oldest of illuminating engineers have no large fund of accumulated experience to draw from, the fact remains that there are a considerable number of illuminating engineers who are conscientious and thorough students of the subject, and whose opinions and advice are of positive practical value.

On the other hand, the subject is one which has been comparatively little studied by the architect in general, as is shown by the numerous cases of bad installations, and equally clearly shown by the methods, or lack of method, which characterizes their work. There are very few architects who possess personally, or in their organizations, the degree of illuminating engineering skill which is possessed by even the less experienced illuminating engineers.

It is decidedly to the architect's personal advantage, and a duty which he owes to his clients, to advance the practice of illuminating engineering. To this end he should give every possible encouragement and assistance to those who are honestly working to qualify themselves as practitioners. For an architect to turn down the whole proposition is to declare that there is no room for progress in this very important utility; and to seek or accept the advice of specialists in lighting, while refusing to recognize the profession by title, is merely a petty form of stultification. It is no more an admission of weakness on the architect's part to employ an illuminating engineer than it is to employ any other specialist in engineering; the profession has reached that point where there is no longer a valid reason for rejecting it as a false pretender.

Illuminating engineering is a fact, and

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the sooner the architect admits the fact and handles it with the same rigorous scrutiny that he does the other facts pertaining to his profession, the better it will be for himself, his clients and illuminating engineers.

How Orders for Plumbing, Heating and Other Supplies Are Placed in China

In answer to an inquiry, United States Charge d'Affaires Henry P. Fletcher of Peking furnishes the following information concerning the letting of contracts and the furnishing of supplies to contractors for the Chinese government, which applies fully to North China, and, to a great degree, to building construction throughout the Empire: "The Chinese government has no rules, printed or otherwise, for letting contracts or buying materials. The man on the spot with the lowest price and quickest delivery gets the work. Ninety per cent of all the building done in China is done by Chinese contractors. When foreign material is specified, such as heating plants, plumbing, electric light plants, light fixtures, constructional steel, etc., tenders for these materials, either delivered on the ground or put in place, are asked for from the many foreign firms in Tientsin or Shanghai. These firms hold agencies for the materials required, and all arrangements are made with them. Neither the native engineer nor the foreign contractor deals directly with the home houses, as it saves much trouble to deal with large houses well established in China. Their prices include freights, duties and the numberless other small items, and a price is quoted which lands the goods where wanted, and, if desired, puts them in place. The contractor has nothing to do beyond paying the foreign firm in China and making sure that he gets what he ordered. Unless connections are made with a well established firm or a permanent agency

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for a special line of goods created, there is no chance of introducing foreign goods into China. As all the large firms have their own expert engineers, the contractor can have fair prices quoted at short notice on anything. All these firms make it their business to be very much in touch with all proposed work, both government and private. The terms usually offered by the government are one-third on arrival of papers of shipment, one-third on delivery and one-third on acceptance. These government terms varied considerably during the last year; in order to help the foreign firms, as money was tight and exchange bad, the government paid on several occasions one-half on signature of contract and one-half on completion of work."

Growing Uses for Electricity.

Electricity is now being applied to many uses in the home. The electric kitchen of 1910 is a table with a row of knobs at the back for wire connections. Each utensil has a heater in the bottom. The cook plugs the short wire attached to the stew pan, or whatever it is, into a socket in the back of the table and the pan heats up at once. A new electric range has pads on the top that are heated red hot by electricity. The cooking is done in ordinary utensils set on the tops. It is known as a quick oven for pies and similar things.

Electricity is used in washing, ironing, and cooking, for sweeping and for running the sewing machine and the pianola. The electric razor is built on the principle of the lawn mower. It has several blades that turn at the rate of several thousand revolutions per minute. You connect it with an electric light globe socket and mow your face.

The electric shaving mug heats the water in the mug for shaving, for drinking, or making chocolate. Electric toilet articles are numerous. Electric massage jiggers are well known. Almost every barber shop has one. A similar machine is made for women.

The electric corn popper is another novelty. You put the corn in the popper, turn on the electricity and shake. Electric heaters have been in use for a long time. The head of a family pushes a button that closes the bedroom window before he gets out of bed in the morning. He pushes another button that turns on the electric heater. Before he is out of his bath the water is hot in his electric shaving mug, and a turn of the button sets his electric razor humming.

His breakfast is prepared on the electric range, with the bread toasted on an electric toaster on the table. When he has finished he takes his electric motor or an electric train to his office. His

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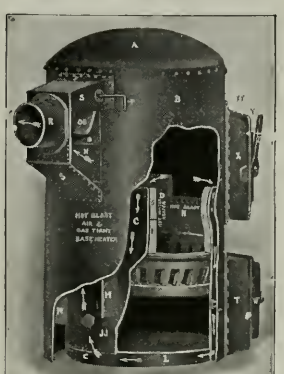
house is swept and cleaned by electrical devices, the linen is washed and ironed, and all the other work completed with the aid of electricity. When he returns for dinner at 7 o'clock the meal has been cooked by electricity and is ready to serve.

Butte Engineering Company Busy

A San Francisco firm that seems always to have plenty to do is the Butte Engineering and Electric Company of 683 Howard street, Paul C. Butte and C. F. Butte, proprietors. This firm has been prominent in the reconstruction work in San Francisco, many of the best buildings that have been erected since the fire having been wired by them. Recent out of town contracts closed include the wiring of the Spaulding building, a 12-story bank and office structure at Portland, designed by Architect Cass Gilbert of New York. At Los Angeles, the Butte company will install the power plant and hoisting machinery in the new building of the Pacific Hardware and Steel Company. One of the most recent contracts in San Francisco is the electric wiring in the new Spreckels theater on Market street. It is a matter of considerable interest that the Butte company did the electrical work in the handsome new Hotel Sacramento, which was so fully illustrated in the February Architect and Engineer.



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By the Way

Some Industrial Information Worth the While

The Fresh Air System

House heating is of three kinds—steam, hot water and warm air. The Pacific Blower and Heating Company of San Francisco makes apparatus for all three systems, and its judgment as to their respective merits is absolutely unbiased. Warm air, however, has a great many advantages over other systems.

The warm air system gives perfect ventilation by supplying all the rooms heated with plenty of fresh warm air. This can be secured in other methods of heating only by expensive indirect systems.

A warm air furnace is simple to care for, easy to control, and quicker than any other system to respond to drafts or checking. It keeps the house absolutely free from gas and dust, and is very economical in the use of fuel.

These advantages all provide that a first-class furnace be used, and that it be properly installed, and if this is done no more healthful or satisfactory method of heating can be used.

The Pacific furnace appeals to the class of dealers who believe in warm air heating on account of its merits rather than its price. The company's first aim is to build heaters which will by their high grade reflect credit on warm air heating. Its facilities for producing good heaters are the very best—its plant is equipped with the most modern devices for turning out goods which are right—its shipments are promptly and carefully made.

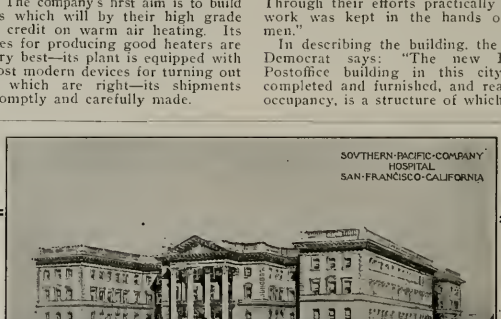
The Inner Bond System of Reinforcement

Arthur Priddle of San Francisco, office 133 Geary street, is having splendid success with his reinforcing bar for concrete construction. Used in a number of prominent buildings, its practicability has been fully demonstrated to the satisfaction of not only the inventor but the architect and owner. There is no lost section to the Priddle internal bond bar. Every part of it has its structural value. It is a bond for the concrete in every sense of the word, and makes an indisputably strong reinforcement. Clifford B. Rushmer, C. E., is no longer associated with Mr. Priddle as chief engineer of his consulting department.

The New Santa Rosa Postoffice

The Santa Rosa Press-Democrat, in describing the new Postoffice building in that city, praises the work of Hoyt Bros., the general contractors. Among other nice things, the paper states that "the new building was constructed by the well known contracting firm of Hoyt Bros. of this city, and reflects great credit upon their skill and ability. Through their efforts practically all the work was kept in the hands of local men."

In describing the building, the Press-Democrat says: "The new Federal Postoffice building in this city, now completed and furnished, and ready for occupancy, is a structure of which Santa



This cut shows the new **Southern Pacific Co's. Hospital,** D. J. Patterson, Architect, as it will look when the west wing is completed. The main building, east wing, annex, and the power house are all faced with **"Goldeo Gate Sandstone"** brick, made of sand and lime at Antioch. The new wing will require 250,000 of these brick for the facing. You know the **Southern Pacific Co.** buys the best of materials, hence our brick were specified. We also manufacture at Stockton all kinds of Clay Pressed brick —Enamel, Mat Glazed, Buff, and Fire. **GOLDEN GATE BRICK CO., 660 Market St.**

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Rosa may well be proud. In completeness of detail and artistic finish it even surpasses the new Sonoma County Courthouse, of which so much has been heard. Few people have any idea of the handsome interior appearance of this beautiful structure, which is so soon to be thrown open to public use.

"The building is provided with secret corridors throughout, and every movement of those engaged in handling or assorting the mails, or transacting any of the details of the money order department, can be watched from the vantage points, unknown to the employes.

"In the basement is the heating plant, together with the automatic arrangement for instantly heating what water is needed in the lavatories. Turning on a hot water faucet anywhere in the building automatically throws on a full flow of gas beneath the heater located in the basement, and instantaneously the water flows hot.

Los Angeles Pressed Brick Company

The Los Angeles Pressed Brick Company furnished the pressed brick for the International Savings Bank building, H. Alban Reeves, architect, which was illustrated in the February Architect and Engineer. A caption to the effect that the Carnegie Brick and Terra Cotta Company supplied the brick and terra cotta was an error.

Southern California University Buildings

Plans were prepared some time ago by Architects Train & Williams, 226 Exchange building, Los Angeles, for a group of buildings to be erected for the University of Southern California. The entire group of buildings will cost over $1,000,000. President Bovard states that conditions are such that it will be possible to erect the chapel and administration building at once. They will be fireproof buildings, constructed of brick, and will conform to the present buildings in style of architecture.

Contract for Bluxome

Bluxome and Company of San Francisco, reinforced concrete contractors, have been given the contract to build a factory building for the Pacific Coast Syrup Company, from designs by Engineer John B. Leonard. The building will be three stories and entirely of reinforced concrete.

Their Fourth Library

Hoyt Bros. of Santa Rosa are acquiring a reputation as Carnegie library builders. Contracts were signed recently by this firm for the construction of a $15,000 library building at Livermore, William H. Weeks, architect, which makes the fourth library which these contractors will have built in the past few years.

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Showing Splendid Deposits of Pyrmont Brick Company at Lincoln, Cal.

Pyrmont Brick Company Has Splendid Clay Deposits

THE illustrations shown in this article will help one to form some idea of the extensive development work that is being carried on at Lincoln, Cal., in the interests of the Pyrmont Brick Company. More than forty acres have been opened and the company is reported to be immensely pleased with the results that have been accomplished thus far. The clay deposits are said to be A1 in every particular. In carrying on the development work the company is using a big electric hoist and a tram railway in and about the pit for the rapid and economical handling of the various grades of material. The train is made up of one and a quarter yard side dump steel cars, which carry the clay from different parts of the pit, according to the class of clay desired, via cable hoist to an elevated dump, from which it is shot directly into the cars for shipment. The clay is of an unusually high grade and is particularly sought for the manufacture of pressed, enamel and glazed facing brick and the highest grade of terra cotta. The pit is operated the year round, having in use a 10-H. P. motor and centrifugal pump by which means all water is removed as fast as it goes in. During rainy weather the loading of cars is carried on without the slightest interruption, from the extensive storage sheds into which the

Partial View of Plant, Pyrmont Brick Company, Lincoln, Cal.

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clay is dumped from the elevated tramway when the weather will permit. This clay is now being used as far south as Los Angeles, where they say "The best is none too good for us." Some of the large potteries about the Bay cities are finding that the ability to secure this clay in any quantity and at all times, enables them to produce a special color in brick and terra cotta that is very much in demand. Although in operation only a little over one year the Pyrmont company has shipped fully one hundred carloads of forty tons each in thirty consecutive days. Great interest is centering in these clay deposits, the quality of which has been little heralded heretofore and it is confidently predicted that the day is not far off when the manufacture of porcelain, chinaware, and other high-class goods will be extensively carried on in Lincoln and vicinity. The Pyrmont Brick Company is capitalized by Sacramento people, M. J. Dillman being the president and E. S. Brown of the wholesale firm of Ennis Brown Co., secretary and treasurer. Mr. Dillman is giving the business his entire time and the company expects to be producing a number of lines of manufactured clay goods the coming summer, plans for extensive building being in the hands of engineers at the present time.

Acetylene Generator Will Save Money

For country homes, where gas and electricity are not obtainable, an acetylene generator will be found a valuable substitute for coal oil lamps. Architects who have occasion to design summer homes in the country should bear in mind the fact that the Acetylene Supply Company maintains a distributing office on the Pacific Coast in charge of E. D. Bullard, 268 Market street, who will gladly furnish without charge information that will assist a designer in providing suitable lighting facilities for country homes, manufacturing plants, club houses, etc.

Following are three instances of successful use of the Pilot acetylene generators:

"A year ago the Vance Redwood Lumber Company of Humboldt county purchased a so-called acetylene machine from a local agent at a cost of over $200, and after using it a few months they found it so wasteful and expensive that they concluded to go back to coal oil lamps. Mr. Ten Eyck, my Humboldt county agent, heard of this, and went to them, and, after a number of interviews and much persuasion, received permission to put in a 50-pound Pilot on trial, with the understanding that if it stood the severe requirements and was satisfactory in the matter of operating expenses they would pay for the machine, and place their order for

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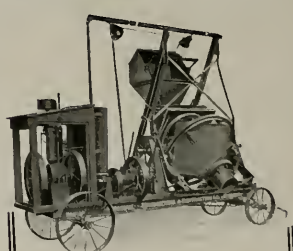

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three more of the same size. The Pilot was installed early in October, and after operating for 60 days they expressed themselves entirely satisfied, paid for the machine, and put in their order for three more 50-pound Pilots.

"The Empire Gun Club, Monterey county, California, J. B. Hauer, secretary-treasurer, 407 Crocker building, San Francisco, writes that the Pilot installed in their club house works perfectly, and gives them entire satisfaction.

"Mr. R. A. Jackson, 1052 Broadway, Oakland, has a beautiful bungalow residence on Piedmont Heights. To light his place he has both electric and acetylene light, and he reported the other day that his expense with the two lights was as follows:

"The cost of acetylene gas, generated by a Pilot, for 40 days.....$2.25

"The cost of electric light for 40 days .....$6.90"

Architect Hedger Wins Suit

The bills that "stupefied and paralyzed and terrified and horrified" Jeremiah Lynch must be paid. A jury in Judge Sturtevant's court has returned a verdict directing the politician and Egyptologist to reimburse Henry H. Hedger, a San Francisco architect, in the sum of $4,375 for the preparation of plans and specifications for the Ibis building, on Bush street, near Kearny. This is in addition to $500 already paid Hedger.

Lynch's cross-complaint for $75,165 damages for alleged neglect on the part of the architect was ignored by the jury. The amount asked for by Hedger was $5,450, but the jury figured his percentages upon a somewhat lower total.

"The testimony of Lynch is not worthy of credence," said Attorney Louis Beedy to the jury. "The defendant is not to be believed. He said that he and Hedger agreed that the building was not to cost more than $85,000, but this could not have been so, because in his application to the Board of Works for a permit he estimated the cost of the structure at $125,000. He is, in fact, contradicted by his own handwriting, by his statements made on the witness stand, by his statement made in a deposition in October, 1908, as well as by the application for a building permit."

Siberia Comes to America for Machinery

The San Francisco office of the Lansing Wheelbarrow Company recently completed the boxing and shipping of a half-yard size Chicago Improved Cube Concrete Mixer, which was shipped on the steamer "Mongolia" for Siberia. The Lansing Wheelbarrow Company feels gratified at securing this deal, as it was consummated after the purchaser had spent several days in San Francisco looking over concrete machinery.

These machines are being used exclusively for the work on the Panama Canal, as well as for many other important government jobs.

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Structural Engineers.

Lathrop and Hill, consulting and structural engineers, have established permanent offices in the Call building, San Francisco. Both members of the firm are well known to the engineering profession and both are members of the American Society of Civil Engineers. Mr. Hill is a native of California and was formerly associated with Assistant State Engineer Ralph Barker. Mr. Hill has also done considerable bridge work for the Atlantic Gulf and Pacific Company. The steel frame of the new Class A telephone building at San Jose was designed by Mr. Hill who was called in as consulting engineer by Chief Draughtsman Cobbe. Mr. Lathrop has been equally prominent in the performance of local work. He was employed on the Southern Pacific power house at Fruitvale and was at one time chief draughtsman for the United Railroads. He has also done some engineering work for Architects Bliss and Faville of San Francisco.

New City Architect for San Francisco

Normand W. Mohr has been appointed City Architect by the San Francisco Board of Works, to succeed Emil de Neuf, who served in the office since Loring P. Rixford's retirement three months ago. De Nuef resumes his civil service post as chief draftsman.

Mohr studied architecture in the University of California, and attended a number of terms at its branch, the San Francisco Institute of Art. He was for a time in the office of former City Architect William Mooser. He is a San Franciscan by birth, and has spent virtually all of his 30 years here. He is married, and a member of the firm of Fabre & Mohr, whose offices are in the Pacific building.

A Fireproof Partition.

Architects who want an economical and at the same time fire and sound proof partition wall, will find in the Makowski plaster block a most desirable substitute for the expensive hollow tile or metal lath. The plaster block weighs less than 8 pounds per square foot, which is an important factor in its favor. Its shape is convenient for handling and it can be laid quickly and at no considerable expense. A fine key on the face of the block will hold the finish white coat quite as well as metal or wood lath. There is nothing to burn or wear or crack about the Makowski block, valuable factors which architects will quickly recognize. The Makowski block is handled by the Plaster Block Company, office, Macdonough building, San Francisco.

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Hotel Sacramento, Showing Tile Floor in Main Lobby
Furnished by the Hulse Tile Company

The Tiled Floors in the Hotel Sacramento.

More than 15,000 feet of vitrified floor tiling was laid in the main lobby and in the bath rooms of the Hotel Sacramento. A glance at the photo reproduction of the lobby gives one some idea of the quantity of floor tile used. The tile are in two colors—white and buff—which make a very pleasing combination. Glazed wall tiles are used in the public toilet while the floor of the loggia is finished in red Welsh quarry tile.

The tile were furnished and put down by the Hulse Tile Company of 437 O'Farrell street, San Francisco.

The splendid mill work in the hotel was turned out by G. W. Kopp of Sacramento.

Growing Popularity of White Enamel.

The plans and specifications now being prepared for almost all the apartment houses in San Francisco call for a white enamel finish. What an agreeable change it is from the cheap, dull stain effect so long in vogue with this class of buildings. This doleful finish still obtains with the cheaper flats and bungalows, but the better class of structures now call for the dainty and artistic white finish.

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An Index to the Advertisements

PAGE

Adams & Hollopeter.....100
Amweg, Frederick J.....123
Anderson, G. J.....122
Armitage, F. C.....132
Armstrong Cork Co.....152
Art Metal Works.....133

Bagge, W. H., & Son, Inc.. 27
Bank Equipment Co.....144
Bluxome & Co.....111
Boyd & Moore....129, 131, 141
Brady, C. A.....145
Braun, J. G.....20
Breite, W. W.....123
Bridgeport Wood Finishing Co.....23
Brittain & Co.....24
Brode Iron Works.....28
Building Material Co., The, Inc. 6
Bullard, E. D.....27
Butte Engineering Co.....101

California Art Glass Works. 21
Calif. Bldg. Materials Co...124
Calif. Magnesite Co.....124
Calif. Mantel & Tile Co....105
California Nursery Co.....143
Calif. Pboto Engraving Co..151
Calif. Valve & Air Brake Co.135
Callaghan & Manetta.....30
Canadian Bank of Commerce.142
Carnegie Brick and Pottery. 15
Central Electric Co.....106
Century Electric & Fixture Co.....105
Charruau, Cbas. M.....128
City Plumbing Co.....105
Clarke, D. Ross.....151
Clinton Fireproofing Co.2d cover
Clover Leaf Machine Co..... 8
Coleman, Alex.....107
Columbia Marble Co.....10
Cook, H. N. Belting Co..... 30
Corrugated Bar Co.....26
Crane Company 31
Crowe, F. T. & Co.....140
Crowley, E. D. Co.....144

Dalziel, Robt., Jr. Co.....103
Dean Reversible Window Co. 17
De Laval Dairy Supply Co..122
Denny-Renton Clay & Coal Co. 15
Diamond Brick Co.....14
Dieckmann Hardwood Co.... 32
Dietzgen, Eugene Co.....142
Doak Sheet Steel Co.....128
Dodd's Interlocking Block Co. 133
Docll, Carl & Co.....145
Duncan & Rehfisch.....151
Dunlevy & Gettle.....149
Dwan, J. E. & Co.....22
Dyer Bros.....11

Eastern Reinforced Cement Tray Co. 145
Electric Railway & Mfg. Sup. Co.....4th cover
Elevator Sup. and Repair Co.129
Engstrum, F. O. Co.....14
Enos Co., The.....104
Enterprise Supply & Mfg. Co. 148
Esterly Construction Co.....122

Fee, Grant.....144
Fish, Ferdinand.....126
Follansbee Bros. Co.....102
Foster & Vogt.....146
Fuller, W. P. Co.....17, 127

Gilley-Schmid Co.....107
Glidden Varnish Co.....147
Golden Gate Brick Co...18, 108
Golden Gate Struct. & Orn. Iron Works..... 27
Goodyear Rubber Co.....138
Grant Gravel Co.....112
Green, H. B. 29
Greenleaf, George R.....105
Gutleben Bros.....137

Haines, Jones & Cadbury Co.127
Hanbridge-Luyst Elec. Co...107
Hansen & Johnson 149
Hart Heater Co., The.....101
Haslett Warehouse Co.....132
Hipolito Screen & Sash Co. 17
Hock, Charles H.....145
Holmes Disappearing Bed Co.114
Hotel Sacramento.....152
Howard, E. A. & Co..... 5
Howe Scale Co.....29
Hoyt Bros. 151
Humphrey Co.....21
Hunt, Robt. W. & Co.....113

Inlaid Floor Co.....124

Johnson, J. A. M.....122
Johnson, S. T. Co.....124

Kanawha Chem. Engine Co.158
Keithley, E. A..... 7
Kelly, J. F. Co.....104
Keuffel & Esser Co.....111
Keystone Boiler Works.2d cover
Keyt's Sanitary Basin Plug Co. 156
Kopp, G. W.....147
Knudsen, P. J., Co.....121
Kruse, J. H.....130, 131

Lamson Consolidated Store Serv. Co. 134
Lange & Bergstrom.....111
Lathrop & Hill.....122
Larson, Louis J.....149
Lemos Bros.....114
Leona Chemical Co.....28
Lilley & Thurston Co..... 31
Lindley Oil Burner.....103
Los Angeles Pressed Brick Co. 14
Lynch, A. & Co.....137

Mackenzie Roof Co.....109
Maddern, Henry T.....107
Maher, W. E.....132
Mailing Case Mfg. Co.....22
Mangrum & Otter..... 32
Markley, James E..... 27
Marshall & Stearns Co.....120
McEnerney, C. L.....103
McKay, N. H.....137
McWhirter & Drake.....145
Mechanical Dust Suction Co..113
Menardus, Elimar E.....151
Menzer, C. & Son..... 21
Metropolis Construction Co.131
Meurer Bros. .....3d cover

Montague, W. W., & Co.... 5
Morrin, Thos.....123
Morrison Electric Co.....149
Mott Iron Works.....137
Moulin, Gabriel 22
Munich Art Glass Co..3rd cover
Municipal Eng. & Con. Co..112
Musto Sons-Keenan Co..... 11

National Furnace Co.....125
National Lynwood Co..3d cover
Neece, The Geo. F.....137
Nelson, N. O., Mfg. Co..... 31
Northwest Bridge Works...148

Olympic Roofing Co.....116
O'Mara, J. E.....105
O'Rourk, T. F..... 27
Oregon R. R. & Nav. Co....139

Pacific Blower & Heating Co. 103
Pacific Coast Asbestos.....151
Pacific Laboratories.....142
Pacific Photo and Art Co....138
Pacific Rolling Mills..... 28
Pacific Surety Co.....151
Pacific Tank Co.....135
Paraffine Paint Co.....116
Parrott & Co..... 3
Parker-Preston & Co., Inc.. 19
Pennsylvania Rubber Co....130
Petersen, H. L.....146
Peterson, Nelson & Co.....149
Petersen, P.....149
Pfister & Co.....113
Pioneer Roll Paper Co.....125
Plaster Block Co.....119
Port Costa Brick Works.... 14
Power & Pike Co.....107
Priddle, A.....2d cover
Pyrmont Brick Co..... 14

Ralston Iron Works, Inc.... 27
Ransome Concrete Co..... 8
Reardon Crist Const. Co...137
Reinforced Concrete Pipe Co.136
Reliance Ball-Bearing Door Hanger 135
Rickon-Ehrhart 31
Riesbmuller, G.....144
Roebling Construction Co...109
Ruud Manufacturing Co.... 23
Russell & Erwin Mfg. Co... 2

Samuel, H. D., Co.....122
Samson Cordage Works.....137
Santa Fe Lumber Co.....146
Sartorius Co. 29
Schastey & Vollmer.....142
Self-Cleaning Filter Co.... 18
S. F. Comp. Air Cleaning.. 13
S. F. Metal Stamping and Corrugating Co. 22
Silva Heating & Plumb. Co.106
Simonds Machinery Co.....137
Smith, Emery & Co.....111
Southern Pacific Co.....153
Spencer Desk Co.....144
Standard Construction Co... 27
Standard Engineering Co...149
Standard Supply Company..149
Standard Varnish Works...118
Stanley Works.....129
Steiger & Kerr Stove & Foundry Co. 133
Strable Mfg. Co.....131

[Index continued on Page 120.]

A Quick and Economical Partition

The Dodd interlocking partition block is having quite a call for partition work in buildings that have been constructed and occupied and where the owner desires to put in additional partitions without tearing up the floors and ripping the ceilings, besides causing unnecessary noise and making a lot of dirt. The blocks can be put in position quickly and without interrupting the tenants, and are serviceable for all time, being permanent and fireproof. They are absolutely dry and light in weight. They are said to be just as fireproof as terra cotta and require no wood grounds nor blocks for fixing trim. They are absolutely interlocking, and need only a skim or finishing coat of plaster to complete. The block partitions may be erected and completed the same day. Partitions have recently been placed in the Hooker and Lent buildings and the Rochet-Cordes building, the latter being arranged for the new quarters of the Army and Navy club. Other buildings that have the blocks are the Drexler, Dr. Merritt, Marquis hotel and the Sheldon building. The offices of the Dodds Interlocking Block Company are at 24 California street, San Francisco.

Waterproofing

J. J. O'Hagan, formerly with the Thompson-Starrett Company, and who was also at one time connected with the government work at Panama, has been sent to Seattle to look after the waterproofing interests in that territory for Parrott and Company of San Francisco. Mr. O'Hagan is thoroughly familiar with the waterproofing business, and Parrott and Company are considered fortunate in securing the services of so competent a man. This firm is also handling the Rulofson sheet metal window, which is pronounced one of the most satisfactory metal windows on the market today, and which is in use in nearly all the prominent fireproof buildings in San Francisco.

Golden Gate Brick

Manager C. F. Pratt of the Golden Gate Brick Company, and a hustler, reports having recently closed a contract for furnishing brick for the new State House hotel at Sacramento, now under construction. C. W. Dickey is the architect of this splendid new hostelry, and the Ransome Concrete Company is the contractor. The building is to cost over $100,000. Mr. Pratt has also received an order from the Southern Pacific Company to supply Golden Gate sand-lime brick for the last wing of the Railroad Hospital. Another job that the Golden Gate Company has taken recently is an order for sand-lime brick

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for a 1-story store building designed by Architects Krim and Scott. A number of the architects specify Golden Gate brick now in preference to all other brands.

Architectural Finishes and Stains.

One of the most attractive and interesting booklets that has come to our attention is the little volume entitled "Architectural Finishes and Stains," issued by the Standard Varnish Works. The cover is in heavy silver gray paper—the color being the same as the Standard's famous Kleartone acid stains. In offering to architects this attractive booklet with complete specifications and descriptions of the various brands handled, the Standard Varnish Company has aimed to give information not only accurate and thoroughly reliable, but in concise and simplified form, as a convenient reference when writing specifications for natural or stained finishes.

As the matter has been compiled by practical varnish makers, expert hardwood finishers and leading contract painters, the architect is assured that in following the specifications he is specifying the best finish attainable.

Special attention is drawn to the Kleartone Oil Stains, which are very clear in tone, easily applied, and can be used without risk of retarding finishing coats, as no dangerous ingredients are employed in their manufacture.

Some remarkable results have been obtained in a series of reproductions of original sample boards treated with Kleartone oil stains. Although these samples are reproduced in printers' ink the coloring has been so perfectly done that it is difficult to detect the cuts from the wood samples. Architects may have a copy of this beautiful book by writing to the Pacific Coast distributing agents, W. P. Fuller & Co., and mentioning this magazine.

Fine Apartment House.

Plans have been drawn for an apartment house to be erected at the northeast corner of Bush street and Van Ness avenue, San Francisco, for the Behlow estate company by Architects John & Schmidlin. The estimated cost of the building is $100,000. The building will contain 56 apartments of two and three rooms and bath each, complete to the minutest detail. The specifications call for steam heat, steel frame, hardwood finish and disappearing beds.

The exterior will be Italian renaissance, terra cotta, pressed brick and stone being used in varied colors.

A feature of the building will be the spacious entrance with marble panels, tile floors and hardwoods. The frontage on Van Ness avenue is 60 feet and 100 feet on Bush street.

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J. E. HEBER, 703 Central Building
PORTLAND, ORE.
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ADVERTISERS' INDEX—Continued from Page 117

Sturgeon & White.....145
Sutton, John G., Co.....147

Tay, George H.....127
Taylor & Johnson..... 9
Thomson Bridge Co..... 16
Tomasello, S. & Co.....128
Tozer Company 24
Trussed Concrete Steel Co...119
Tucker, W. W.....146

Union Fibre Co..... 19
United Glass Works..... 12

Valente & Leveroni.....145
Vacuum Eng. Co..... 20
Van Emon Elevator Co..... 1
Vulcan Iron Works..... 28

Wadsworth, Howland & Co..139
Wagner, Ferdinand.....122
Warren Construction Co....134
Waterhouse & Price Co....
.....154, 155, 156
Waters & Co.....142
Watson Roof Co., The..... 4
Weary & Alford Co..... 32
Wells & Spencer Machine Co. 151
Wellington, Geo. J.....144
Western Building Material Co. ..... 4th cover
Western Builders' Sup. Co. 25
Western Iron Works..... 29
White Bros.....109
Williams & Carter Co..... 30
Williamson, E. L.....150
Wilson, W. H., & Co..... 27
Woods & Huddart..... 32
Wood, John, Mfg. Co.....121
Wood Waste Distilleries Co.132

Yager Sheet Metal Works..145

Zeis, Oscar L.....104

Hardwood Flooring Is Cheaper Than Carpet

White Bros., hardwood dealers of San Francisco, contribute the following:

"The ordinary yard of carpet is 27 inches wide by 3 feet in length. Thus a carpet yard contains only 6¾ square feet. Carpet sells from $2 to $9 and up per yard. A fair average for good carpet would be $3 per yard, and that is putting it quite low for a high grade of floor covering.

"Tongued and grooved oak flooring ¾ inches thick will cost from $1.15 to $1.55 per carpet yard, all laid and polished. We will take, for instance, the highest quality of clear quartered oak flooring, ⅜ inches by 2-inch face. This will cost somewhere around 10 cents a square foot or 67½ cents per carpet yard. Twenty-five per cent waste will have to be allowed for the tongue, and this will amount to 17 cents. Laying and polishing will be done by almost any floor layer for 10 cents per square foot. This will amount to 67½ cents for the labor, or a total of $1.52 for a carpet yard of the finest clear quartered oak flooring, which will beautify any house and exhibit more taste and a greater degree of elegance than any carpet that was ever made. This is about half the price of good carpet.

"We will next take the grade of flooring known as select plain oak. A carpet yard of this, including waste for the tongue, will cost 45½ cents, and the laying and polishing, etc., 67½ cents, making a total of $1.15 per carpet yard for a high grade handsome plain oak floor, a little more than a third of the price of good carpet. Between these two grades mentioned are two other kinds at intermediate prices.

"It is thus seen that a hardwood floor can be laid for one-half to one-third of the price of fair grade carpet, and when it is taken into consideration the extra high priced carpet which it would be necessary to lay in order to approach anywhere near the elegance of a hardwood floor, it will be seen that carpets are an expensive luxury as compared with hardwood.

"On the beauty of a hardwood floor it is unnecessary to expatiate at any length. Everyone recognizes their value and utility, but most people think that they cannot afford a hardwood floor, laboring as they do under the impression that it costs a lot of money. The lumber yards throughout the country towns should educate their customers in the understanding of the beauty, hygienic value, cheapness and general desirability of hardwood flooring. In this way a very lucrative business could be built up, as our balmy California climate and rotation of seasons makes a smooth, clean, polished floor almost a necessity. The country yards could draw their supplies from San Francisco dealers, such as White Bros. of Spear and Howard streets. This firm is the principal handler of thin oak flooring on the Pacific Coast."

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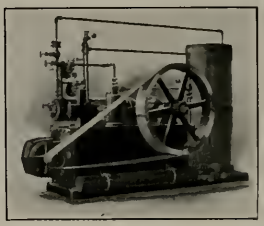

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To Standardize Electrical Specifications

The California Association of Electrical Contractors is making a great fight for better conditions in the electrical contracting business throughout the Golden State. One of the main objects sought is to standardize the bidding by persuading the architects to adopt uniform specifications. President W. S. Hawbridge offers the following excellent suggestions:

1—BIDS—Under this heading describe whether or not the owner reserves the right to reject any or all bids.

2—GENERAL—Under this heading include service board, switches, conduits, outlet boxes, cutout cabinets complete with panel boards and fuses, main feeders, sub-feeders, circuit wires, switches, bells and telephones, annunciators, speaking tube, wire and appliances, etc., and this contractor shall furnish all necessary labor and material to properly install all light and power, telephone, etc., wiring in accordance with the plans and these specifications.

3—DRAWINGS—Under this heading it will be noted that certain classes of work, mainly larger classes of work, require a layout, and it will be well for the architects to specify that a layout of the conduit or circuit wires or both be made before the work is started.

4—SYSTEM—Under this heading describe whether A. C. or D. C. If A. C., single, two or three phase; two, three or four wire; 25-33-60 or 133-cycle. If D. C., 110-220 or 500 volts; two, three or four wire mains—this applying to both light and power service.

5—SERVICE CONNECTION—Under this heading it would be well for the architects to specify a certain locality, even though arbitrary, where the main switch and cutout shall be located—this enabling the contractor figuring the job to figure from a given point of distribution, and, even if the architect is wrong in determining the point, it will probably be a small matter for an extra, if additional wire has to be run to another point in the building for service connection. In case of a central plant, the service connection can also be specified at the switchboard.

6—SERVICE SWITCHBOARD—Where it is located; number of switches it will contain; division, if any; description of the switches; description of switchboard. In the case of private house work, probably one main switch will do for the entire house, and no service switchboard will be necessary.

7—WIRE SHAFTS—In large buildings it is necessary to provide at least one, and as many more wire shafts as possible, to enable the contractor to make a well regulated distribution of the circuits, and these wire shafts should be built sufficiently large for the requirements of the electricians.

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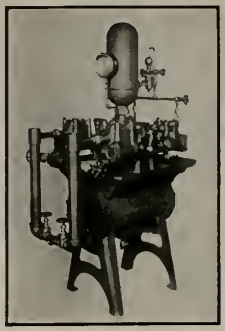

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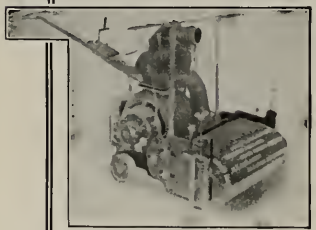

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8—MAINS AND FEEDERS—Describe the size of the main, if possible, or the number of lights controlled. For the feeders and sub-feeders, describe the panel boards, number of circuits which they will control, together with the lights on the same.

9—MOTOR CIRCUITS—Describe the number, H. P., size, where located, and whether the electrical contractor is to connect same with starter, or is only to run to a given point, and other contractors to connect the motors. Also state whether or not this contractor is to furnish the motors complete, connected up.

10—WIRING—Under this heading describe the fact that the building is to be wired for incandescent lamps, Nernst, Flaming Arcs, Tungstens, etc., with a certain number of watts on each circuit.

11—FANS—Under this heading describe where these are to be located, and whether or not to be furnished by the contractors.

12—WINDOW LIGHTING—Describe whether reflectors of a certain kind are to be furnished by the contractor, and if not how the circuits are to terminate.

13—DISTRIBUTION—The plans should show the outlets, and the architects should use the Standard Symbols to describe these outlets.

14—FIXTURES—Under this heading describe whether or not the contractor is to hang the fixtures. It would be well, however, if the architect is to have the letting of the fixture contract, to make a separate contract of the fixtures—however, on small stores, office buildings and residences, this can readily go in with the wiring specifications.

15—SPECIFIC LIGHTING—Here describe any special features of lighting which cannot be clearly shown on the plans.

16—WIRE—Size, quality, kind. National Electric Code will describe wire for the average contract.

17—CONDUITS—Describe kind and quality of conduit to be used, loricated, galvanized or sheradized, if rigid; Greenfield or equal if flexible, and BX cable if conductor. If a job is to be a mixed knob and tube and conduit job, describe where the knob and tube work will occur, and where the conduit work will occur.

18—INSTALLATION OF CONDUIT—Under this heading describe the construction of the building, and how it will be possible to erect the conduit, and whether or not the same will be concealed or open work.

19—LOSS OF PONTENTIAL—This is an important point, and should be gone into carefully, and the specifications

written so that a test is required with all lights burning. A reasonable per cent should be allowed, and all honest contractors will he very glad to have a test made of their own work.

20—LAMPS—Who is to furnish and erect same.

21—OUTLET BOXES—Describe.

22—DROP CORDS—Furnished by whom, and describe.

23—FLOOR OUTLETS—Describe make and quality.

24—WALL OUTLETS—Describe make and quality.

25—CUTOUT CABINETS—This is a point which should be carefully described by the architect, as a great deal of discrepancy is found usually between what is desired and what is obtained in a finished job. If an architect does not have a standard panel board specification describing the various sorts of panel boards, it would be well for this architect to write to any of the panel board manufacturers for a specification on this important point.

26—CENTERS OF DISTRIBUTION—Describe here how built up and what is to be fed from the same.

27—METER LOOPS—Under this heading local conditions will govern somewhat, but, in the main, the contractor should leave meter loops ready for the installation of the meter by the outside company.

28—METERING PANELS—This will come under the same head as cutout cabinets, except that in case of large buildings, where metering panels are required, special note should be made of same.

29—ELEVATOR LIGHTS—Describe how far the contractor is to go toward furnishing the elevator lighting mains, fixture, etc., in cage.

30—SWITCHES—Under this heading describe whether switches are to be flush or open type, push button or snap, where located, control of lights for same and how mounted.

31—CONTROLLING LIGHTS—Under this heading describe any special control, such as 3-way or 4-way switches, or control which cannot be easily shown on the plans, which would embrace corridor lights, exit lights and similar lights which are ordinarily controlled from a remote point.

32—ANNUNCIATORS AND BELLS.

33—PUSH BUTTONS.

34—WATCHMAN SYSTEM.

35—INTERIOR TELEPHONES.

36—EXTERIOR TELEPHONES.

37—TELEGRAPH OUTLETS.

38—BURGLAR ALARMS.

39—ELECTRIC CLOCK.

40—PROGRAM CLOCKS.

41—POLE LINE AND POLES.

42—TEST OF WIRING AND INSTALLATION.

43—QUALITY OF WORK.

44—ORDINANCES.

45—GUARANTEE AND BOND.

46—STANDARD SYMBOLS.

47—SCHEDULE—Under schedule it would be wise for the architect to make a complete summary of all outlets for various purposes throughout the building. This in a measure would check his own plan from error, and would assist materially in estimating the work and checking up propertly afterwards.

48—CERTIFICATE OF PAYMENT.

49—RETAINING PAYMENT.

50—FINAL PAYMENT.

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The Ruud Water Heater Company, H. R. Basford, manager at San Francisco, has found the change of location to 428 Sutter street a good move, as it brings the headquarters of the firm nearer to the shopping center.

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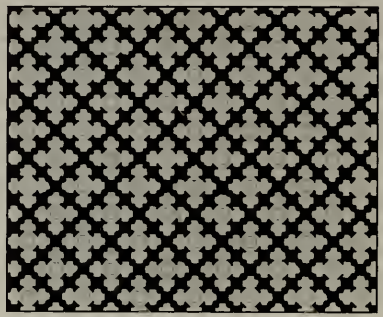

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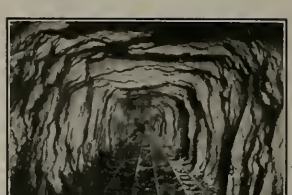

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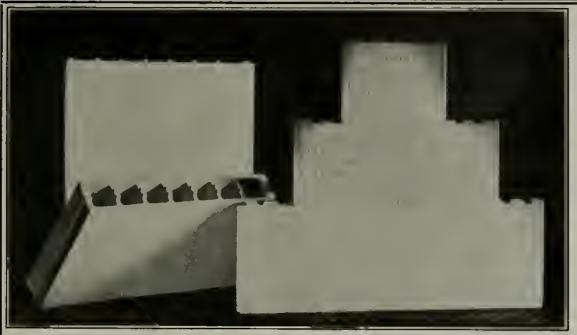

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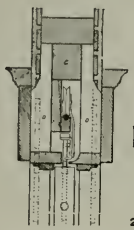

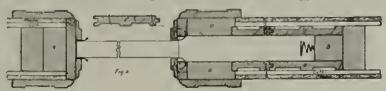

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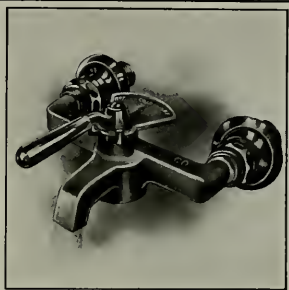

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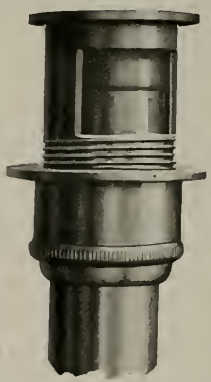

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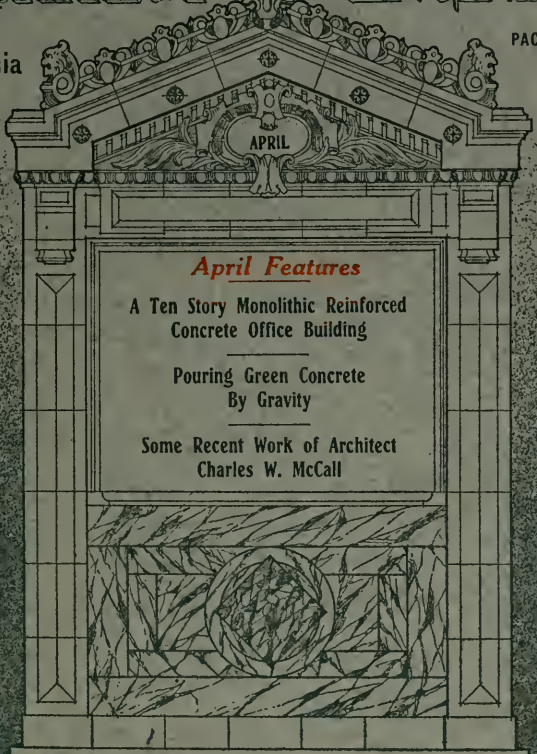

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Pouring Green Concrete By Gravity

Some Recent Work of Architect Charles W. McCall

Architect and Engineer Co.
San Francisco Oakland Los Angeles Portland
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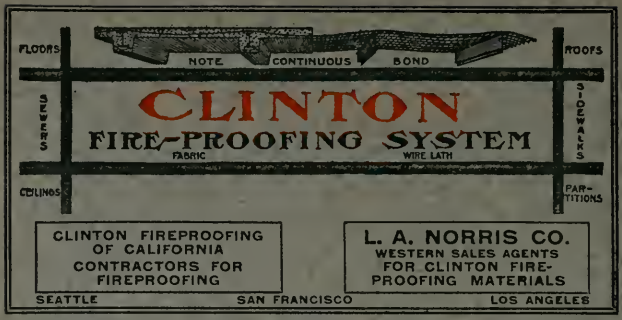

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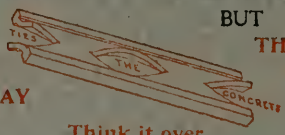

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March 2, 1910.

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We are installing elevators that are the best in the market, and our completed work speaks for us. The elevators in such buildings as the Hewes, Foxcroft, Atlas, Spreckels Annex, Commercial, Newhall and many others, will bear witness to our claim that the people of California can patronize "Home Industry," as far as we are concerned, with a certainty of obtaining satisfaction.

We guarantee all our apparatus and manufacture to a *universal standard*, so that when the purchaser has to buy repair parts he can go into the open market and buy in competition. With a Trust elevator, you *must* buy from them or shut down your elevator, for every part is made to a standard of their own.

Every elevator bought from our competitor means over $1,000.00 in wages sent East that could be expended here to machinists, foundrymen and pattern makers, and the following question should be brought to the attention of every purchaser of an elevator: "What good am I doing California when I buy an Eastern made machine, especially when I can buy as good, if not a better, one here?"

In conclusion we wish to say that as the stockholders, officers and employees are doing their share toward the upbuilding of this great State by investing their money here, bringing up their families here and spending their money here, the "Manufacturers and Producers Association of California" might "boost" the Van Emon Elevator Company by advocating the awarding to it of elevator contracts wherever possible.

Yours very truly,

VAN EMON ELEVATOR COMPANY,

By R. J. DAVIS, President.

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(For Index to Advertisements, see page 117)

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E. D. Ballard.....268 Market St., S. F.
ARCHITECTURAL AND ORNAMENTAL STEEL AND IRON WORK
Golden Gate Structural & Ornamental Iron Works.....1435 Mission St., S. F.
Vulcan Iron Works....604 Mission St., S. F.
Western Iron Works, 141-147 Beale St., S. F.
Pacific Rolling Mills,
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Northwest Bridge Works.....Portland, Ore.
Dyer Bros.....17th and Kansas Sts., S. F.
Ralston Iron Works,
20th and Indiana Sts., S. F.
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122 Tenth St., near Mission, S. F.
Callaghan & Manetta.....344 10th St., S. F.
C. Menzer & Son.....862 Howard St., S. F.
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C. Menzer & Son.....862 Howard St., S. F.
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Pacific Coast Asbestos Co.,
210 Columbia St., Portland
Western Asbestos Magnesia Co.,
Balboa Bldg., S. F.
ASBESTOS-PROTECTED METAL
P. J. Knudsen Company, Pacific Coast Agents,
310 California St., S. F.
AUTOMATIC FREIGHT ELEVATOR DOORS
Boyd & Moore.....356 Market St., S. F.
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Bank Equipment Co..Monadnock Bldg., S. F.
J. A. M. Johnson....Monadnock Bldg., S. F.
Weary & Alford Co.,
303 Union Trust Bldg., S. F.
C. F. Weber & Co., 365 Market St., San Francisco and 210 N. Main St., Los Angeles, Cal.
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Weary & Alford Co.,
303 Union Trust Bldg., S. F.
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Keyt's Sanitary Basin Plug Co.,
932 Monadnock Bldg., S. F.
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317-319 Howard St., S. F.
Goodyear Rubber Co....587 Market St., S. F.
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Swedish Venetian Blind Co., William & Carter, Pac. Coast Agts....197 Jessie St., S. F.
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Keystone Boiler Works
Main and Folsom Sts., S. F.
Simonds Machinery Co., 12 Natoma St., S. F.
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Wadsworth Howland & Co., Inc. (See Adv. for Pacific Coast Agents.)
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Clunie Bldg., Monty'y and Calif. Sts., S. F.
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Frost Bldg., Los Angeles
Pyrmont Brick Co.....Lincoln, Cal.
Boyd & Moore.....356 Market St., S. F.
Northern Clay Company.....Auburn, Wash.
BRICK MASONS
Chas. H. Hock ....910B Devisadero St., S. F
McWhirter & Drake....Builders' Exch., S. F.
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Waterproof Flat Brick Stains. Made by Parker, Preston & Co., Inc. Pacific Coast Branches, Monadnock Bldg., S. F. and Central Bldg., Los Angeles.
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Commercial Bldg., S. F.
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Ainsworth Bldg., Portland, Ore.
Boyd & Moore.....356 Market St., S. F.
Waterhouse & Price.....59 Third St., S. F.
Lilley & Thurston.....82 Second St., S. F.
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Western Builders' Supply Co.,
680 Mission St., S. F.
CASTINGS
Pacific Rolling Mill Company,
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Steiger & Kerr Co., Folsom and 18th Sts., S. F.
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Standard Supply Co.,
First St. and Broadway, Oakland
Pacific Portland Cement Co.,
Pacific Bldg., S. F.
Western Building Material Co.,
430 California St., S. F.
The Building Material Co., "White Portland,"
587 Monadnock Bldg., S. F.
Boyd & Moore.....356 Market St., S. F.
Lilley & Thurston.....82 Second St., S. F.
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Makowski Plaster Block Co.,
Maedonough Bldg., S. F.
C. Menzer & Son.....862 Howard St., S. F.
Dodds' Interlocking Block Company,
24 California St., S. F.
CEMENT AND PLASTER CONTRACTORS
Callaghan & Manetta.....344 Tenth St., S. F.
D. Ross Clarke.....708 Pacific Bldg., S. F.
C. Menzer & Son.....862 Howard St., S. F.
Acme Cement Plaster Co.,
750 S. Alameda St., Los Angeles
CEMENT EXTERIOR WATERPROOF COATING.
Protectorine, Black, White and Colorless, Boyd & Moore.....356 Market St., S. F.
Weatherproof Coating, Made by Parker, Preston & Co., Inc., Pacific Coast Branches, Monadnock Bldg., S. F., and Central Bldg., Los Angeles.
Bay State Brick and Cement Coating, made by Wadsworth, Howland & Co. [See distributing agents on page 139.]
CEMENT TESTS
Robert W. Hunt & Co.,
425 Washington St., S. F.
Pacific Laboratories, Inc.,
558 Market St., S. F.
Smith, Emery & Co.....651 Howard St., S. F.
CEMENT EXTERIOR FINISH
Medusa White Portland Cement, California Agents, The Building Material Co., Inc.,
587 Monadnock Bldg., S. F.
"La Farge" sold by Waterhouse & Price,
59 Third St., S. F.
"Vitrolite" Cold Water Paint, sold by Boyd & Moore.....356 Market St., S. F.
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Bay State Brick and Cement Coating, made by Wadsworth, Howland & Co. [See list of distributing agents on page 139.]

CHEMICAL ENGINEERS
Robert W. Hunt & Co., 425 Washington St., S. F.
Pacific Laboratories, Inc., 558 Market St., S. F.
Smith, Emery & Co., 651 Howard St., S. F.

CHEMICAL ENGINES
Kanawha Chemical Engine Co., Charleston, W. Va.

CHIMNEY BUILDERS
Durlevy & Gettle...79 City Hall Ave., S. F.
Dresser, McDonnell & Co., 39-49 Isis St., S. F.

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Spencer Desk Co.....Monadnock Bldg., S. F.
C. F. Weber & Co.....365 Market St., S. F.

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Ferdinand Fish...250 Montgomery St., S. F.

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Hydrex Felt, Boyd & Moore, Agents, 356 Market St., S. F.
Union Fibre Co., manufacturers of Waterproof Lith, Union Corkboard, Linofelt, Coast Agency.....710 Pacific Bldg., S. F.

CONCRETE CONSTRUCTION
Bluxome & Co.....5 Front St., S. F.
Foster & Vogt, Builders Exchange, 180 Jessie St., S. F.
A. Lynch & Co., 314 Builders' Exchange Bldg., S. F.

CONCRETE MIXERS
Coltrin Concrete Mixers, N. J. Morehouse, Western Agent, Waterloo, Iowa; J. L. Merry Eng. Co., Monadnock Bldg., S. F.; V. W. Mason.....St. Johns, Ore.
F. T. Crowe & Co., Seattle, Tacoma, Spokane and Portland
Chicago Improved Cube Mixer. Pacific Coast Offices, 789 Folsom St., S. F., and F. T. Crowe & Co.....Portland and Seattle
Lilley & Thurston.....82 Second St., S. F.
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Lilley & Thurston Co...82 Second St., S. F.
International Fabric & Cable, represented by Western Builders' Supply Co., 680 Mission St., S. F.
Kahn System.....S. F., L. A. and Portland
Twisted Bars sold by
Woods & Huddart....356 Market St., S. F.
Northwest Bridge Works....Portland, Ore.

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"Alkacene" Liquid Concrete—Boyd & Moore, 356 Market St., S. F.
Glidden Liquid Cement, manufactured by Glidden Varnish Company. Whittier, Coburn Co., San Francisco and Los Angeles, Pacific Coast Distributors.

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W. H. Bagge & Son, Inc., 3528 Sacramento St., S. F.
Esterley Construction Co.....Berkeley, Cal.
Lange & Bergstrom, Monadnock Bldg., S. F.
Metropolis Construction Co., 34 California St., S. F.
F. O. Engstrum Co., Los Angeles and San Jose, Cal.
Hoyt Bros., Builders' Exchange, S. F., and Santa Rosa
P. Peterson.....Fruitvale, Cal.
Louis J. Larson...1231 Chestnut St., Oakland
Ransome Concrete Co....Crocker Bldg., S. F.
Northwest Bridge Works, Fifteenth and Front Sts., Portland
Redmond, De Luca & Barzellotti, 268 Montgomery St., S. F.
Gutleben Bros...944 Monadnock Bldg., S. F.
Rickon-Ehrhart Eng. & Const. Co., 1859 Geary St., S. F.

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ARCHITECTS' SPECIFICATION INDEX—*Continued*

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Boyd & Moore.....356 Market St., S. F.
"Pabco" Damp Proofing Compound sold by Paraffine Paint Co.....38 First St., S. F.
H. D. Samuel Company, 23 Valencia St., S. F.
"Protectorine," Compound, sold by Boyd & Moore.....356 Market St., S. F.
Parrott & Co., agents for Genasco Positive Seal Damp Proof Paint.

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Holmes Disappearing Bed Company, 687 Monadnock Bldg., S. F.

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DOOR HANGERS
Pitcher Door Hanger sold by Pacific Tank Co.....318 Market St., S. F.
Reliance Hangers.....(See page 133)

DOORS—FREIGHT ELEVATOR
"Cross" Counterbalance Automatic, Boyd & Moore, Agents.....356 Market St., S. F.

DOORS—METAL
Waterhouse & Price.....59 Third St., S. F.

DOORS—REVOLVING
"Van Kannel" Revolving Doors, Boyd & Moore.....356 Market St., S. F.

DOORS—VENEER
Northwest Door Co., Albina Ave., Portland

DOORS—WAREHOUSE
"Cross" Horizontal Folding Doors, Boyd & Moore, Agents.....356 Market St., S. F.

DUMB WAITERS
Energy Dumb Waiters, Boyd & Moore, Agents.....356 Market St., S. F.

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Central Electric Co...185 Stevenson St., S. F.
Hanbridge-Loyst Electric Co., 77 Sutter St., S. F.
Butte Engineering Co...683 Howard St., S. F.
Jno. G. Sutton Co.....229 Minna St., S. F.

ELEVATORS
Van Emon Elevator Co...54 Natoma St., S. F.
Wells & Spencer Machine Co., 139 Beale St., S. F.

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W. W. Breite.....Chronicle Bldg., S. F.
F. J. Amweg, C. E., 700 Marston Bldg., S. F.
Chas. M. Charrnau, Contracting Engineer, Humboldt Bank Bldg., S. F.
Lathrop & Hill.....1305 Call Bldg., S. F.

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Reebling Construction Co., Crocker Bldg., S. F.

FIREPROOF SHUTTERS AND DOORS
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United Glass Co.....115 Turk St., S. F.
Munich Art Glass Company, Inc., 667 Mission St., S. F.

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E. A. Howard Co.....20 Howard St., S. F.
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Adamant Co.....Worcester Bldg., Portland
Empire Hard Wall Plaster Co., Pacific Bldg., S. F.

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Ruud Mfg. Co., 428 Sutter St., S. F.; 651 S. Hill St., L. A.; 294 Yamhill St., Portland, Ore.
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Gilley-Schmid Co., Inc., Thirteenth and Mission Sts., S. F.
Jno. G. Sutton Co.....229 Minna St., S. F.
John Wood Mfg. Co., 471 Cypress St., Oakland
Pacific Blower & Heating Co., 17th St., betw. Mission and Valencia, S. F.
Geo. W. Schmitts Heating and Ventilating Co.....1160 Webster St., Oakland

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Pacific Laboratories, Inc., 558 Market St., S. F.
Smith, Emery & Co., Inc., 651 Howard St., S. F.

INSURANCE
Voss, Conrad & Co., Monadnock Bldg., S. F.

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Schastey & Vollmer., 1930 Van Ness Ave., S. F.
W. W. Tucker, Fourteenth and Webster Sts., Oakland

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Union Fibre Co., Winona, Minn.; Coast Agency.....1710 Pacific Bldg., S. F.

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LAUNDRY TRAYS
Eastern Reinforced Tray Co., Eighteenth and Clementina Sts., S. F.

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Geo. R. Greenleaf, 2107 Addison St., Berkeley
The Enos Company..1748 California St., S. F.
Adams & Hollopeter....745 Mission St., S. F.
J. F. Kelly Company, 723 7th St., Oakland
Century Electric Co., 13th and Clay Sts., Oakland, Cal.

LOCKERS—METAL
Hart & Cooley Co., Boyd & Moore, Agents, 356 Market St., S. F.

LUMBER
Santa Fe Lumber Co., Seventeenth and De Haro Sts., S. F.

MACHINERY AND MACHINERY SUPPLIES
Machinery and Electrical Co., 351 N. Main St., Los Angeles
Steiger & Kerr Stove & Foundry Co., Folsom and 18th Sts., S. F.

MAGNESITE
California Magnesite Co., Slauson Ave., Los Angeles

MAILING CASES
Mailing Case Mfg. Co.....219 First St., S. F.

MANTELS
Mangrum & Otter.....561 Mission St., S. F.
W. W. Montague & Co., 557 Market St., S. F.
The J. F. Kelly Co..723-731 7th St., Oakland

MARBLE
Joseph Musto Sons-Keenan Co., 535-565 North Point St., S. F.
Italian & American Marble Works, Sixteenth and Carolina Sts., S. F.
Columbia Marble Co....268 Market St., S. F.

MASONS
T. F. O'Rourk.....180 Jessie St., S. F.
Ferdinand Wagner.....609 Waller St., S. F.

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MECHANICAL ENGINEER
Thomas Morrin.....Balboa Bldg., S. F.

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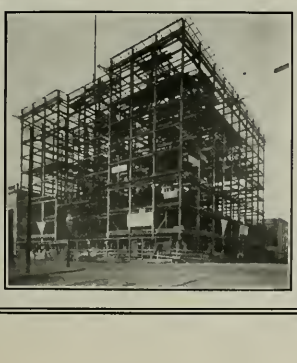
"All United Steel Studding," Lilley & Thurston Co.....82 Second St., S. F.



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Doak Sheet Steel Co.....Sheldon Bldg., S. F.

METAL DOORS AND WINDOWS
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Waterhouse & Price.....59 Third St., S. F.

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Vulcan Iron Works....604 Mission St., S. F.
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Lilley & Thurston.....82 Second St., S. F.

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American Mason Safety Tread, Boyd & Moore, Agents.....356 Market St., S. F.

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D. H. Gulick.....Lick Bldg., S. F.

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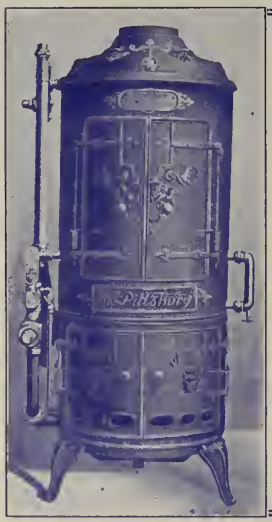

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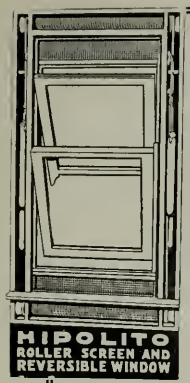

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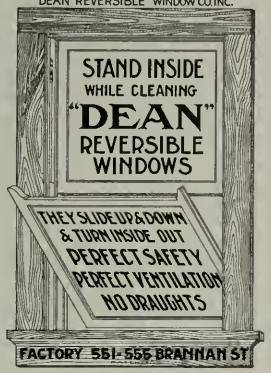

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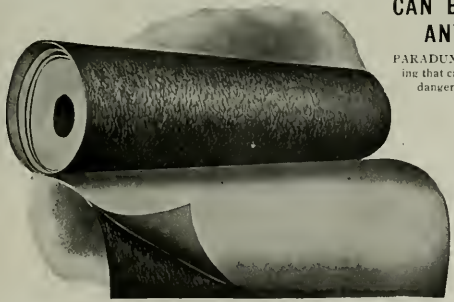

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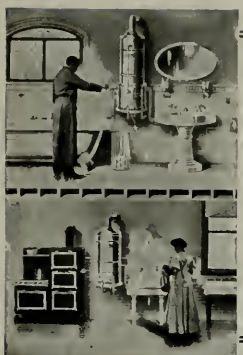

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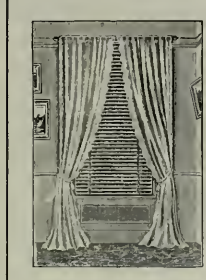

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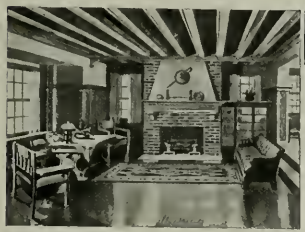

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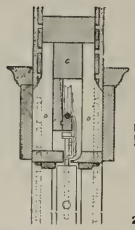

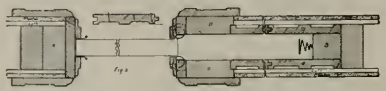

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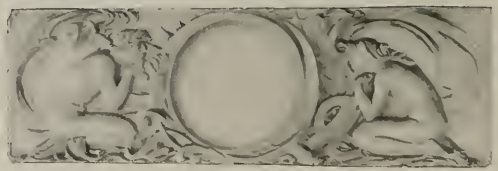

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Issued monthly in the interests of Architects, Structural Engineers, Contractors and the Allied Trades of the Pacific Coast.

Contents for April

		PAGE
A. L. Haley, Architect		*Frontispiece*
A Ten Story Monolithic Reinforced Concrete Building		35
	A. L. Haley	
Illustrated with Progress Photos, Details, Floor Plans, Etc.		
Recent Work of Architect Charles W. McCall		53
Illustrated		
Protection of Openings in Brick Buildings Against Fire From Outside Exposures		66
	O. D. Baldwin, University of California	
Pouring Concrete by Gravity	*H. W. Bryson*	69
Illustrated		
The Need of Publicity and its Value to the Brick Maker		75
	Robert Frothingham	
Interpretation of an Architect's Specification	*Howard C. Lake*	77
Ornamental Concrete Standards for Bridge Lighting		79
	Charles L. Eshleman	
Illustrated		
Concrete Highway Bridges		86
Ceilings and Cornices		86
Hardwood Floors	*J. H. Dieckmann, Jr.*	87
Fireproof Factory Buildings		88
An Expensive Hobby		90
Architectural League of the Pacific Coast		91
Result of the Architect and Engineer Competition		92
Common Brick Market Demoralized		93
Wall Paper Versus Tapestry		93
Among the Architects		94
Editorial		98
Heating and Lighting		100
By the Way		108

A. L. HALEY, ARCHITECT

Frontispiece,
The Architect and Engineer of California
April, 1910

THE

Architect and Engineer

Of California

Pacific Coast States

VOL. XX. APRIL, 1910. No. 3.

A Ten Story Monolithic Reinforced Concrete Building

By A. L. HALEY, Architect.*

A remarkable feature in connection with this monolithic reinforced concrete structure—the Thomas Higgins building, Los Angeles—and an achievement which has heretofore not been accomplished, is the fact that the structural part of the building has been erected within a shorter period than any steel building ever erected on the Coast. The entire undertaking, so far as the structural work is concerned, has been accomplished, including the excavation, within a period of twelve months. Two complete stories were erected within twenty-eight days. But for the delay occasioned in securing a permit for the two additional floors, making the building ten instead of eight stories high, all the structural work, including the roof, would have been finished within eleven months. One of the factors that has entered into the matter of speed with this building has been the gravity system of pouring the green concrete.

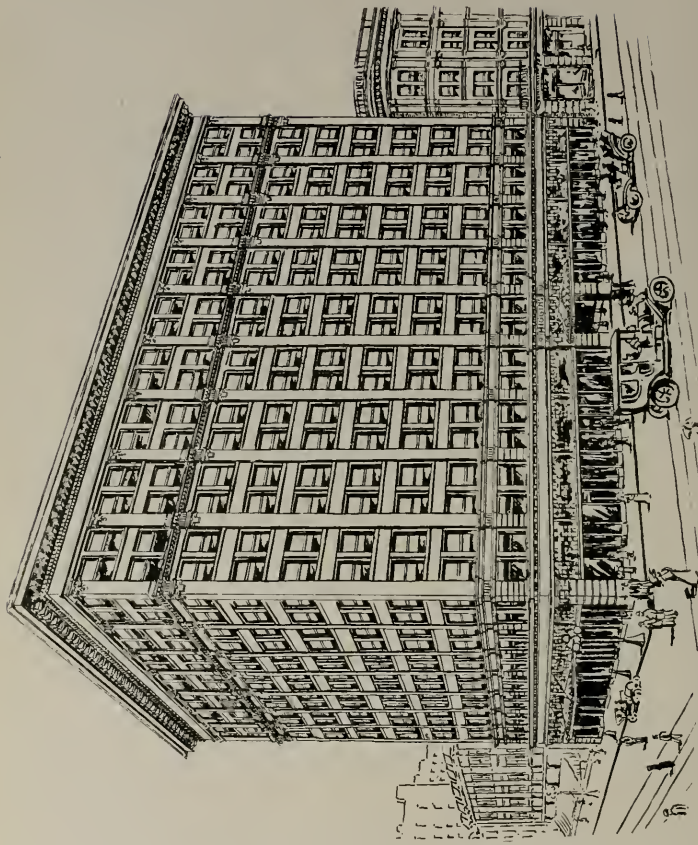
ON THE 19th day of April, 1909, the contract was awarded for the excavating of the Higgins Building, a ten story monolithic reinforced concrete class "A" office building to be erected 120 feet on Main street and 160 feet on Second street, Los Angeles, Cal.

On the 19th of May of the same year the contract for the underpinning of the party wall on the east line was let to M. A. Rowland and Kenneth E. Pruess, who were also awarded the contract for the retaining walls.

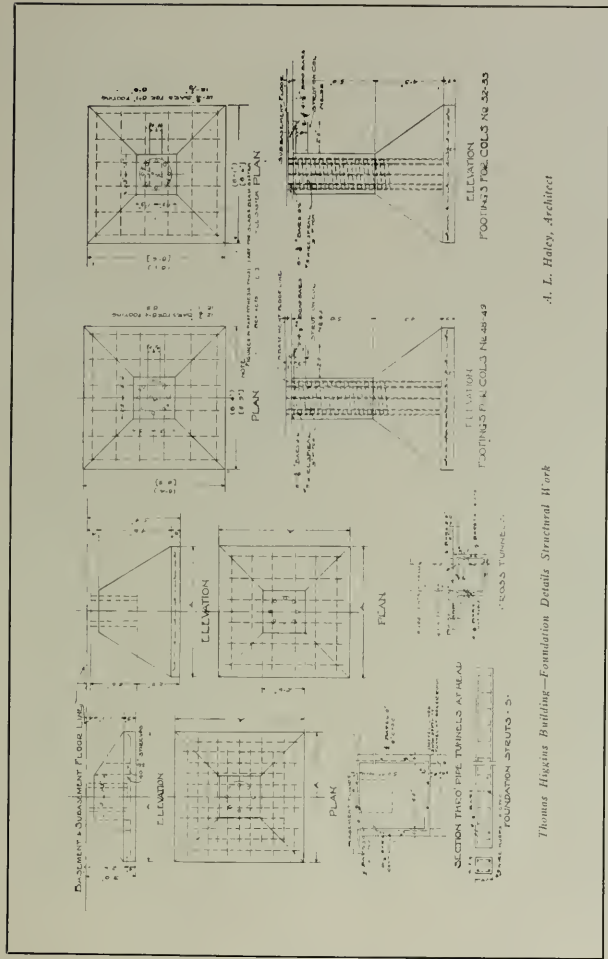
The contract for the structural work of the ten stories was awarded on the 6th day of August, 1909, to Mr. A. Barmann. This contract provided for the furnishing of all steel set in place as required throughout the structural concrete work, including rods, stirrups, anchors, sleeves, ties, lacing, etc., of such shapes and sizes called for by the detail drawings. The steel was to be what is known as medium steel, made in accordance with the standard specifications of steel manufacturers, the plain rods to have an elastic limit of from 40,000 to 45,000 pounds per square inch which, after twisting, to be raised to at least 58,000 pounds per square inch, steel to stand a bending through 180 degrees around a bar of its own diameter without showing any signs of fracture.

In general, the form of steel called for in the reinforced concrete construction, was as follows: For all walls, footings, girders, beam and joist, twisted square rods were to be used. The column reinforcement of round rods was made of column wrapping, securely fastened to rods and the whole placed in position as a unit. Great care was taken that all rods come to full bearing with those below. Before being imbedded in the concrete, care was also taken to have the steel thoroughly cleaned of dust, oil and grease or other matter that would be detrimental to the positive adhesion of the concrete.

*Citizens' Bank Building, Los Angeles.

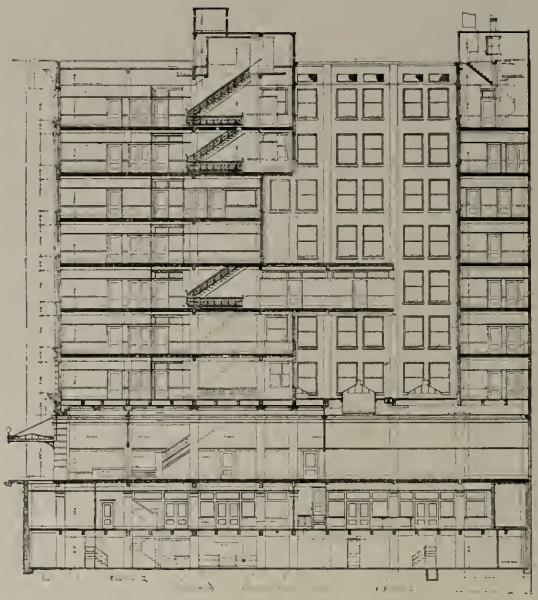


Thomas Higgins Building, Los Angeles A. L. Haley, Architect



Thomas Higgins Building—Foundation Details Structural Work

A. L. Haley, Architect



Transverse Section Showing Huge Foundations and General Construction

In the column footings there were provided spliced bars of a length of 3 feet, bars being placed so that the reinforcement of the columns rested directly on them.

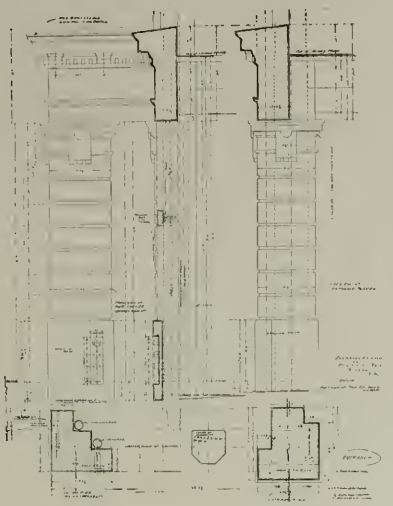
Plain round rods were used in the reinforcement of all columns and the ends of these bars were cut off and milled to even surfaces at right angles to the axis of the bars. Pipe sleeves 4 inches long of a diameter just large enough to encase the bars were placed at each splice. These sleeves were carefully wired in position before pouring the concrete. All columns were wrapped with No. 3 plain, black annealed wire which had an elastic limit of 50,000 lbs. per square inch. The pitch or spacing of this wrapping was 3 inches in all cases.

All walls were reinforced with ⅜-inch twisted bars 18 inches on centers in both directions.

Cement sills were cast after the main portion of the walls and had an additional reinforcement of 3 ⅜-inch bars; the second story belt course

Thomas Higgins Building in Course of Construction *A. L. Haley, Architect*

Thomas Higgins Building—Monolithic Concrete Details
Eighth Story Belt Course
Belt Course Second Story Facade
A. L. Haley, Architect

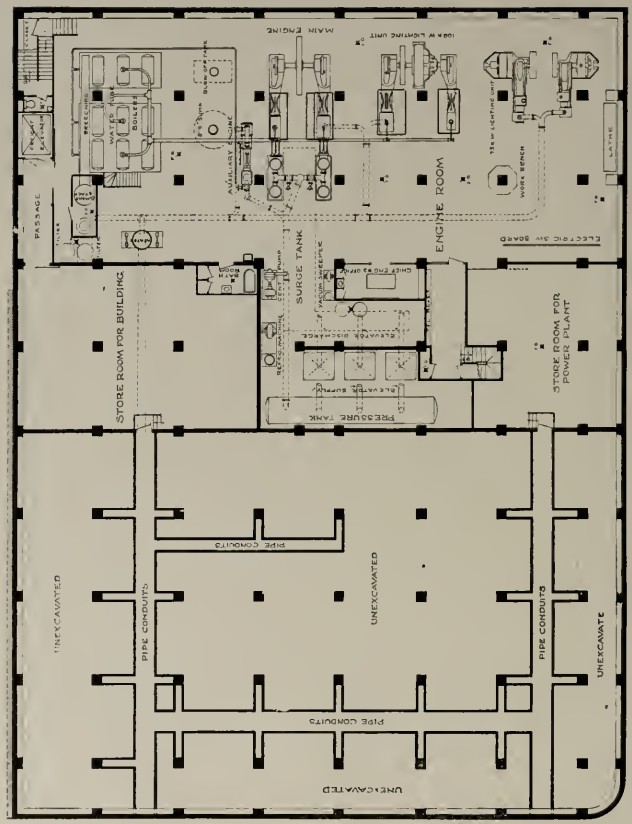


Monolithic Concrete Details—First Story Facade

called for 2 ⅜-inch bars throughout its length. All mullions were reinforced with 4 ½-inch round bars wrapped with wire, 8 inches c. to c.

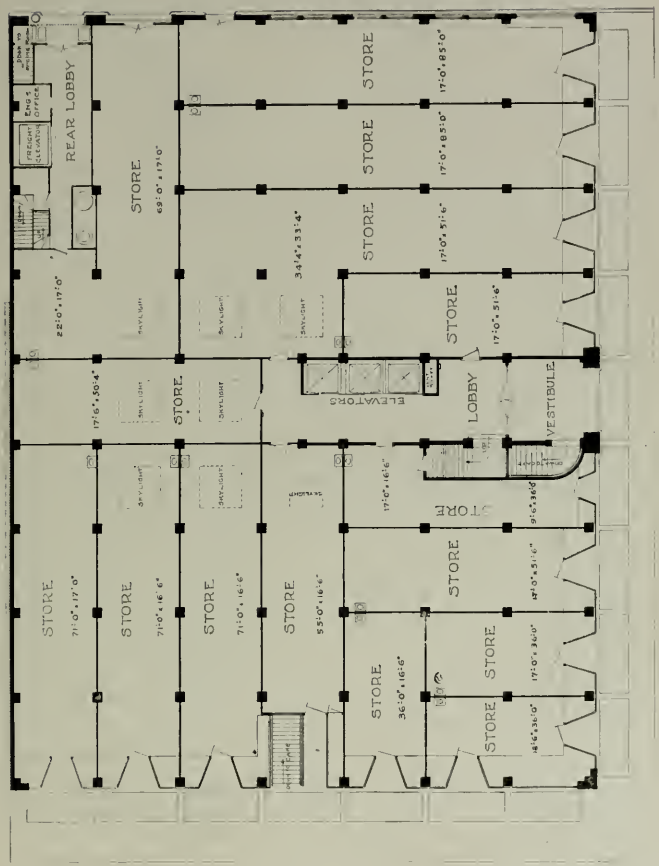
The stairs have ½-inch longitudinal bars spaced 4 inches on centers, and horizontal bars 12 inches from centers. The concrete of the entire work was composed of 1 part cement, 2 parts sand and 3 parts rock, and was measured in suitable carts which had been measured and marked by the inspectors in charge. A barrel of cement was figured at 4 cubic feet and the mixing was done by a Ransome mixer; the amount of water used was determined by the inspector in charge.

Concrete was delivered by means of a pipe and was poured directly into the forms of the girders and columns. Great care was exercised to keep the stone away from the outside forms, after the floor was poured, the contractor was not permitted to place any building materials on same within 24 hours after pouring and in some instances where the cement was slow setting, 48 hours was required. For a period of six days after the



Thomas Higgins Building—Sub-Basement Showing Power Plant

A. L. Haley, Architect



First Floor Plan

concrete was poured the contractor was required to thoroughly saturate the same with water, at least three times every 24 hours.

The forms of all columns and the sides of girders were stripped first; then the forms for the floor slabs, excepting the supports, at two points in each panel, and finally, the supports under the beams.

When the forms on the outside and rear wall were removed the wires were cut off as close to the concrete as possible, and driven back into the wall; then all holes and surface voids were neatly filled and floated smooth. When this work was dry it was given one heavy coat of cement coating. [Wadsworth Howland, Bay State brick and cement coating.]

After the removing of the forms on the court walls, the same were washed with a scrubbing brush and water; then with pumice stone or neat cement briquettes and water. They were then rubbed free of board marks or other imperfections, and received one heavy coat of cement coating and were left in a smooth and evenly colored condition, sills, moldings and fire walls being treated in the same manner.

Preparatory to the laying of the wearing surfaces, throughout the entire building, the following specifications were adhered to: First, the rough concrete was thoroughly scrubbed and washed, sprinkling the same as directed, then the wearing surface, being perfectly level with a minimum thickness of $\frac{5}{8}$ of an inch, was thoroughly troweled and marked off in squares as directed. These surfaces are to be given one coat of Dr. Toch's cement filler, and one coat of Dr. Toch's floor paint.

Carpet strips were built in at all offices and were kept 1½ inches below the finish floor line. Proper screeds and levels for the surface of all concrete were placed in the work as the same progressed, allowing for the proper slopes for drains, etc.

Luxfer Prism Company's system of sidewalk lights, using alternate rows of plain glass No. 63, and prism glass No. 66, are to be installed, made water tight and guaranteed to remain sound for a period of two years.

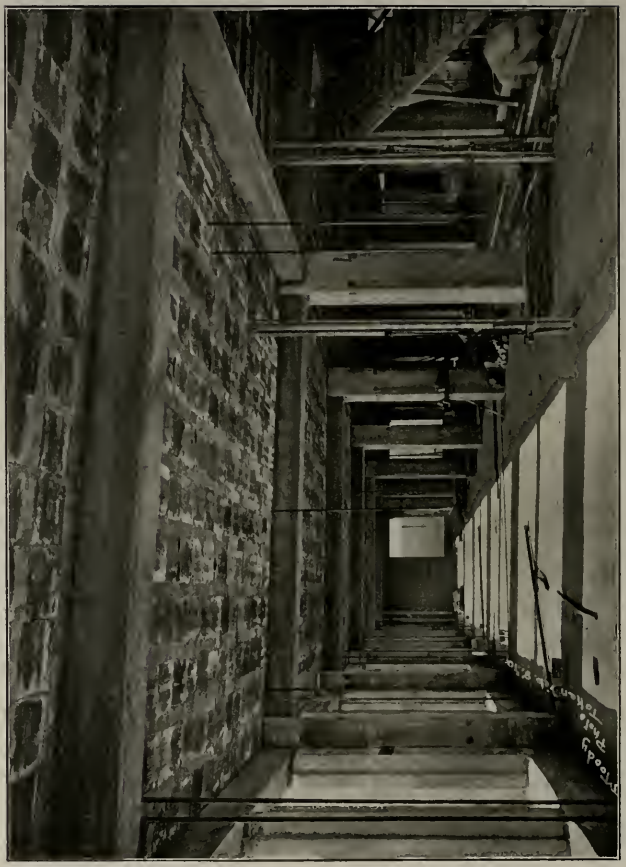
Nailing blocks were placed in the forms of all walls, columns, etc., of the "Angelus" pattern, for the securing of all grounds. The blocks were placed 16 inches on centers for all bases, chair rails, picture molds, window casings, etc., but in no case less than two blocks for one length of ground. The carpet strips of ½" x 1¾" beveled, surfaced O. P. carpet strips were placed in the cement finish of all offices on office floors.

The specifications provided for high-grade cement to be delivered to the building, in original and unbroken packages, and of an approved brand, passing in all respects the requirements as laid down in the Standard specifications of the American Society for testing materials. Samples were taken from each carload of cement upon its arrival at the building. The boiling pats were tested for initial and final set. To develop initial set in not less than one hour and final set in not less than two hours, nor more than eight hours in tension, the briquettes to develop the following strength in pounds per square inch:

Age.	Strength.
Neat, 24 hours (in water after hard set)	200 lbs.
Neat, 1 day air, 6 days water	500 "
Neat, 1 day air, 27 days water	600 "
Sand (1 to 3), 1 day air, 6 days water	200 "
Sand (1 to 3), 1 day air, 27 days water	300 "

No cement was used before it had passed the seven-day test and only upon its acceptance. The cement was stored by the contractor and protected from dampness where it could conveniently be sampled and segre-

Photo of First Floor After Removal of Forms, Showing Slab and Beam Systems of Construction.
A. L. Haley, Architect



Thomas Higgins Building—Showing Tile Construction After Forms Were Removed on Second Floor A. L. Haley, Architect

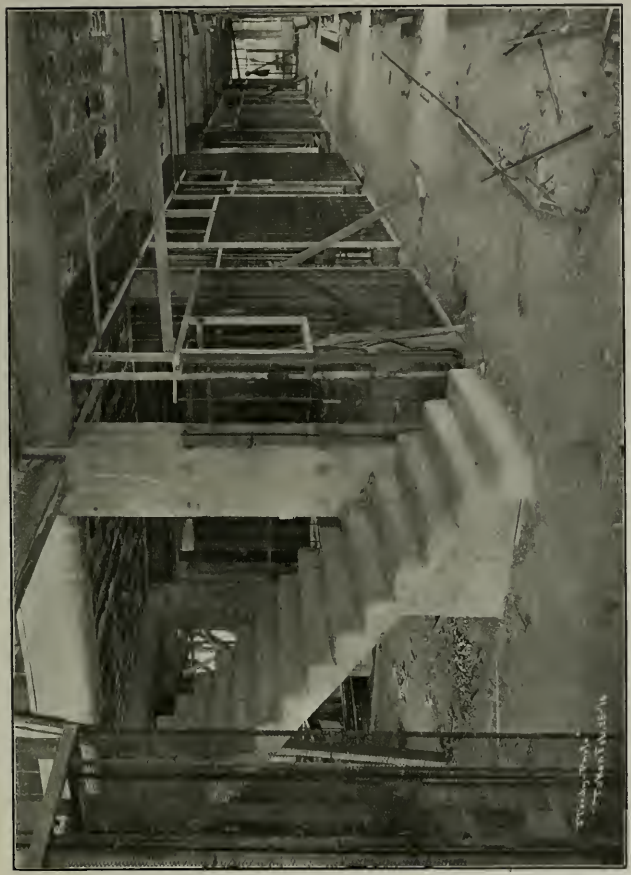
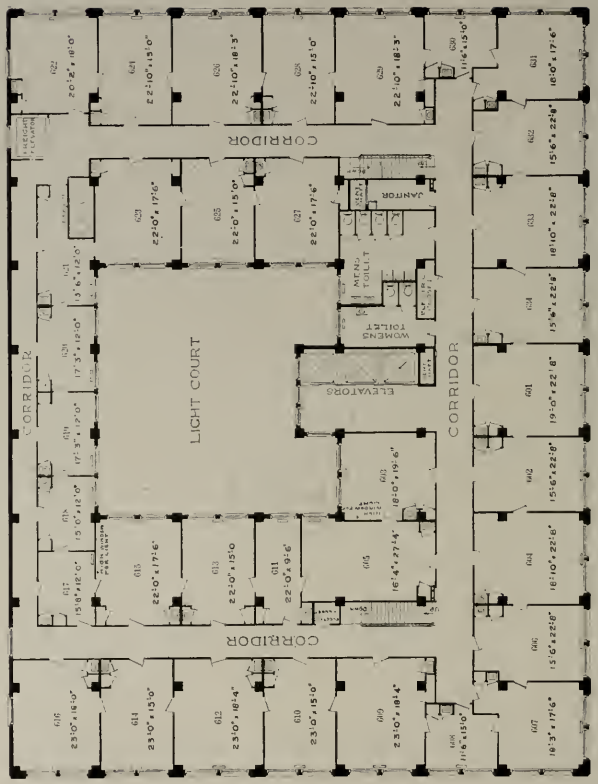


Photo Showing Metal Partitions Before Plastering



Thomas Higgins Building—Typical Floor Plan

gated, i. e., each shipment or carload was piled separately. All cement damaged by dampness or any other cause was rejected and was at once removed from the work.

In connection with the partition work of this building there was included in this contract, which was let on the 21st day of October, 1909, to Mr. R. H. Jones, who provided and set in place hangers of No. 9 galvanized wire for supporting the first and tenth story ceilings and the ceilings of the public toilets on the office floors. These hangers were spaced 2′ 6″ c. to c. in rows of not more than three feet apart. The hangers were of sufficient length to secure the carrying bars of ceiling, which were placed not over three feet on centers. To these carrying bars steel studs 12″ c. to c. were wired with No. 14 annealed galvanized wire. These carrying bars were of 1½″ x ⅛″ flat section, while the studs were ¾″ channels.

In general, the partitions were all two inches thick, but where necessary to fur around pipes they were made of sufficient thickness to cover the pipes. This contract provided for the fastening in places of wires, nailing box, etc., necessary to properly secure all metal work of partitions.

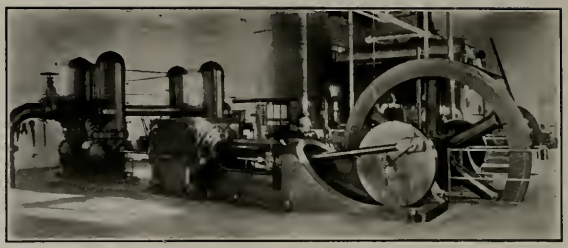
In connection with the erecting of these partitions there was provided and set in place in the center of all 2″ partitions, Oregon pine strips, sized to exact 2″ x 2″, set to perfect line and rigidly wired or nailed in position. These sills or strips had holes 1″deep, of size sufficient to hold the steel studs.

Around all openings there was provided wood frames sized to full 2″ x 2″ and securely nailed together and fastened to the floor. At the ceiling line of all metal lath partitions there are provided a ¾″ channel set on edge, true to the line of the partition and rigidly secured to concrete of metal stud of ceiling. There are studs set vertically of ¾″ channel iron, in holes in sills at the floor line. These studs are securely wired at the top ends to channel iron at ceilings. Studs were set 12″ o. c., and one stud at each side of all openings and wherever else they were required to make a rigid frame partition. Wherever the partitions were thicker than 2″ they were made of two single partitions, built as above described.

To the channel frame of partition above mentioned and to the ceiling studs previously mentioned, there were fastened No. 24 gauge dipped Mahoning approved metal lath, this lath was wired at each bearing with ties of No. 18 black annealed wire, and all lap joints have intermediate ties to same. All plaster joints have metal lath lapped 4″ over the concrete surfaces, likewise over all joints between tile and concrete surfaces.

The grounds for picture mold and chair rail, were 1½″ wide, and of the different thicknesses necessary, and were wired securely to metal lath and studs. On all concrete and tile surfaces grounds were 1½″ wide by ⅞″ thick for all base, chair rail, and picture mold throughout the building. These grounds were set perfectly true to line and thoroughly secured in position. When partition work was ready for plastering, the same was braced in a secure manner to hold the partition plumb and true while the plaster was being applied. At the exposed corners of concrete columns, tile and metal lath partitions, there was provided Mahoning approved corner beads, extending from floor to ceiling, set perfectly plumb and true and securely nailed or wired to partitions.

At all metal lath ceilings and single metal lath partitions there was applied three coats of plaster. All solid partitions received three coats on each side. The first coat consists of Mission plaster, fibered and mixed according to the manufacturer's directions and properly shoved on the lath. The second coat was of the same material unfibered, rodded off to true and



One of the Engines, Power Plant Thomas Higgins Building, Los Angeles

even surface and scratched. All work was rodded to screeds where necessary. All surfaces were given a third or finishing coat of lime, putty and plaster of Paris, troweled to true and even surface, leaving no marks of any kind. All concrete tile and brick surfaces throughout the building, excepting in the engine, boiler and storage rooms, received a first coat of unfibered Mission plaster mixed according to manufacturer's directions, troweled and rodded to a true and even surface. These surfaces then received a smooth coat of lime putty and plaster of Paris, the walls and ceilings of boiler room and engine room were left in the sand finish. The light shafts were plastered on the outside with Portland cement and sand, as follows:

The first, coat of one part of approved Portland cement and five parts of well-mixed lime mortar, fibered and well keyed on the lath. The second coat of one part cement and three parts of lime mortar, rodded off to true and smooth surface. The third, coat of one part Portland cement and three parts sand, troweled to smooth surface, then slap-dashed. This made a first-class job, free from cracks or other defects.

A very important feature in connection with this office building is the metal trimming and windows throughout the building, all of which have been furnished by the San Francisco Cornice Works, of San Francisco.

This firm has furnished and erected all the window frames for the entire building, including the high windows at alley.

The windows were manufactured in strict accordance with the specifications of the National Board of Fire Underwriters of the Pacific Coast, of Nos. 22 and 24 galvanized iron.

The machinery and mechanical power plant is being installed by John F. Connell. This work covers all the materials and labor of each and every kind necessary for the work. The contractor put in all the necessary foundations of concrete of approved size and mixture, and set the necessary foundation bolts for all machinery and other apparatus requiring foundations. He also furnished a competent engineer to operate the power plant for ten days.

Approved water-tube safety type boilers are used, each boiler being set independently and equipped with oil-burning furnaces.

The power equipment includes two pumping engines of the compound, duplex, outside, center-packed, plunger type, each capable of delivering 600 U. S. gallons of water per minute, at a piston speed not to exceed 100 feet per minute against a head of 340 feet, with a steam pressure of 125 pounds at the throttle, and a back pressure of 2 pounds above atmosphere.

There are two high four-valve, side-crank, self-oiling engines—one for direct connection to a 75 k. w. electric generator, and one for direct connection to a 50 k. w. electric generator.

The power equipment is the most complete to be found in any Los Angeles building, but space does not permit of a more extended description of the engine and boiler rooms at this time.

The elevator equipment will be a feature of the building. Three Llewellyn plunger passenger elevators and one freight elevator are to be installed. The floors of the passenger cars are 6 feet 6 inches by 6 feet, and the cars will lift 3000 pounds each, traveling at the rate of 400 feet per minute. The freight elevator floor is 6 by 8 feet, and the lifting power is 3000 pounds at a speed of 100 feet per minute.

All the tile and marble work for the Higgins building has been awarded to B. V. Collins, of 928 South Main St., Los Angeles.

The main entrance will be of white Italian marble up to the top of the moulded cornice.

The public corridors on the office floors, including the sides of all stairways, are to be wainscoted with white Italian marble; also the main stairs and balustrade and all toilet rooms.

The public corridor of the office floors is floored with tile body and border of the same pattern.

The main entrance vestibule beginning at building line and extending to the vestibule doors is tile floor of ceramic mosaic.

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Successful Men

I have on my desk a list of 1,000 successful men of this nation. By "successful" I do not mean mere money makers, but men who have given us new conceptions of steam, electricity, construction work, education, art, etc. These are the men who influence our moral as well as physical lives. They construct for better things.

How these men started in work is interesting. Their first foothold in work is a fine study.

Three hundred started as farmers' sons.

Two hundred started as messenger boys.

Two hundred were newsboys.

One hundred were printers' apprentices.

One hundred were apprenticed in manufactories.

Fifty began at the bottom of railway work.

Fifty—only fifty—had wealthy parents to give them a start.—Geo. F. Brown.

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How to Fume Oak

To a request for information as to how to fume oak, a London trade journal makes the following reply: "This is a very simple matter, and all that is necessary is a room which is comparatively air-tight, in which the furniture should be placed exposed to the fumes of strong ammonia. The ammonia is generally placed in bowls, and the required depth of tone is acquired according to the time of exposure or the quantity of ammonia used."

Detail of Entrance, Royal Insurance Building, San Francisco
Self-Winding Clock Over Main Doorway — *Howell & Stokes, Architects*
Courtesy of Architects and Builders Magazine

Charles W. McCall, Architect

Detail of Entrance

Some Recent Work of Architect Charles W. McCall

SOME of the work of Architect Charles W. McCall is shown in this number of the Architect and Engineer. The photographs are of buildings designed by Mr. McCall in the last half-dozen years, and include business structures, apartment houses, flats and residences. Much of the architect's best work will be found in his residence designs, which are both original and artistic.

Mr. McCall was born in Oakland in 1878. From 1886 to 1892 he lived in Guernsey, Channel Isles, near France.

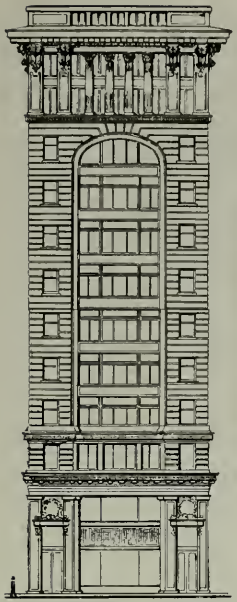
He then went to England, where he attended the Perkins Academy and the Bournemouth Institute of Science and Art.

On returning to America in 1897, he spent two years in the offices of D. F. Oliver, F. D. Voorhees and N. Barker, after which he opened an office for himself.

Mr. McCall is a member of the San Francisco Chapter of the American Institute of Architects.

Sketch of Eighteen Apartments and Two Stores for J. Lancaster, Shattuck Avenue, Oakland
C. W. McCall, Architect

Sherman & Clay Building as It Will Appear with Fourth and Fifth Stories Completed, Oakland, California
C. W. McCall, Architect



Competitive Sketch for a Bank and Office Building

Addison Street Frontage of the Offield Art Store
Berkeley, California
C. W. McCall, Architect

Main Gallery of the Offield Art Store (Nearing Completion), Berkeley, California
C. W. McCall, Architect

Apartment Flats for Miss E. Miller, San Francisco
Standard Construction Company, Builders
C. W. McCall, Architect

Living Room in Residence of Mr. W. S. Miller, Piedmont
C. W. McCall, Architect

Sketch for Twelve Four-Room Studio Apartments for Mr. Howard Osgood
C. W. McCall, Architect

Three Flats for Mrs. R. Wyatt, Oakland, California
C. W. McCall, Architect

Competitive Sketch for a School, Oakdale, California

C. W. McCall, Architect

Dining Room Sketch for a New Inn at Carmel

C. W. McCall, Architect

Exterior of Mr. W. R. Pickering's House, Oakland, California
C. W. McCall, Architect

Sketch for 20' x 35' Living Room for Mr. W. R. Pickering
C. W. McCall, Architect

Four Six-Room Flats for Mrs. R. McCall, Oakland
C. W. McCall, Architect

Study of House and Grounds for Mr. W. A. Stephenson, Piedmont
C. W. McCall, Architect

Residence of Mr. George Hatch, Oakland, California
C. W. McCall, Architect

Residence of Mrs. A. H. Glasscock, Oakland, California
C. W. McCall, Architect

Living Room of Mr. F. W. Greene, Alameda, California
C. W. McCall, Architect

Residence of Mr. James Vance, Oakland
C. W. McCall, Architect

Residence of Mr. H. H. Gribben, Oakland, California
Brick Work and Plastering by John Thomsen *C. W. McCall, Architect*

Hall of Dr. M. Dunn's Residence *C. W. McCall, Architect*

Residence of Mr. F. Osgood, Monte Vista *C. W. McCall, Architect*

Residence for Dr. Murray L. Johnson, Piedmont, California *C. W. McCall, Architect*

Swedish-American Bank Building, San Francisco *Frederick H. Meyer, Architect*

Protection of Openings in Brick Buildings Against Fire From Outside Exposures

By O. D. BALDWIN in the California Journal of Technology.

THE question of the best means of protecting door and window openings in brick or concrete buildings is one of the most important subjects that fire protection engineers have to consider. The National Fire Protection Association has made and is still making a thorough and searching investigation of the various methods now in use, and the necessity of reliable protection of openings against outside fires is recognized by underwriters generally. The ease with which the conflagration in San Francisco spread from brick building to brick building through unprotected window and door openings is but one great example of the vulnerability of a brick structure thus unprotected.

At present the two commonest methods of protecting openings are the use of steel plate doors and shutters, and the use of doors and shutters made of wood and covered with tin. The latter type of shutter is the one now most generally in use on the Pacific Coast. Each type has its disadvantages, each has developed its special advantages, but the tin-clad wood shutter or door has come to be regarded as possessing greater serviceability and fire-resisting qualities.

In comparing the two types of doors, it has been found that the tin-clad door has greater liability to corrosion by the weather, and impairment due to the rotting of the wood, as well as being more easily damaged by rough usage, blows, and wear in opening and closing it. It is also harder to detect defects in construction, and departures from the standard specifications, in the tin-clad door. The door constructed of steel or iron plates has serious objection to it, in that it radiates heat to a dangerous degree, which is not true of a tin-clad wooden door. There is also the liability to warping under the stress of intense heat, drawing the door away from the opening and permitting the entrance of flames to the interior of the building. We shall see that the construction of the tinned door is especially designed to overcome this very serious defect.

All fire-doors and shutters require careful attention as to hangings and supports, as well as the fastenings. In the case of fire-doors, self-closing devices should be installed, a device which will cause the door to close automatically when the opening is attacked by fire, but keeping the door open at other times, if it be desired. In any case, whether provided with such an attachment, or not, all protective doors should be closed nights and Sundays, and at all times when the building is left alone, and at times when the openings are not in use. If this precaution is taken, it is certain that the doors and shutters will be in position to fulfill their function should an outside fire occur when no one is about the premises.

The rules and specifications for fire-doors and shutters issued and recommended by the National Board of Fire Underwriters at New York are the specifications recommended by the Board of Fire Underwriters of the Pacific at San Francisco. These rules are the standard, and are used by the best manufacturers of these doors. Careful following of these rules in all details, is necessary for the proper construction of an effective fire door, and for the securing of credit for the same in the fixing of the insurance rates on the buildings where they are used. The following is a brief summary of the main features called for in the standard wood tin-clad fire door.

First as to the opening. The sill should be of brick or stone, extending under the door, or it may be of iron or steel at least one-fourth inch thick on a brick, stone or concrete base, and built into the wall at least 6 inches on both sides. A third method is to build a sill of concrete, reinforced with angle-iron at each side of wall. No wood or other combustible materials must be used to lay over the sill. Lintels should be brick, but stone or wood tin-clad lintels are not approved.

Sliding doors must overlap the sides and top of the opening 4 inches. Swinging doors must close into a brick rabbet in the wall, or into an angle-iron rabbet secured on each side by three-fourth inch bolts through the wall. Or an approved door frame of iron may be used.

The wood of which the door is composed should be redwood preferably, or of a non-rosinous pine, the lumber dressed, tongued and grooved, boards of not more than 6 inches in width. Where the door is for one side of the wall only, it should be no less than 2½ inches in thickness, but if doors are placed on both sides of the wall, 2 inches is sufficient. In the case of the 2½ inch door, three equal thicknesses of boards are used, the outside layers being vertical and the inner horizontal. A 2 inch door is made of two layers of inch stuff, one thickness vertical and the other diagonal or at right angles. The layers of boards are fastened together by nails driven in flush and clinched so as to leave a smooth surface on both sides of the door.

As to the covering. The fire-resisting qualities of a tin-clad door depend upon the completeness with which oxygen is excluded, thus preventing, or at least retarding combustion. Therefore it is necessary that the tin be so applied that during exposure to fire the tin will not pull away from the boards, nor will the seams buckle, pull out the nails, and expose the wood to the flames. The standard specifications must therefore be followed closely in every detail.

The tin plates should be 14 x 20 inches, of the best grade. Zinc should never be used. All joints must be locked ½-inch, and nailed under the seams, except on the edge of the door. The corners of the door are first covered, using a whole sheet of tin without cutting, making a "mitre fold," with two nails under each fold. The edges of the door are then covered and locked into the corner pieces, next the side sheets are put on, the first sheet at the lower right hand corner, all joints being carefully locked and nailed under the seams. Nails 1½ inches long are used for 2½-inch doors, and 1¼ inches long for 2-inch doors. The sheets should be laid as flat as possible against the wood, in order to avoid air-spaces. The entire tinning is completed before any hardware is put on.

For sliding doors an inclined track, of flat rolled steel is used, ⅜-inch thick, 3½ inches wide, and bolted every 2½ feet with ⅜-inch bolts through the wall, with nuts on the opposite side. The hangers should be of wrought metal, ⅜ x 2½, bolted to the door. Roller guides and binders are also of wrought iron, drilled for ¾-inch bolts. Two handles of wrought iron are required, one on the front, and one on the back, sunk flush with the surface of the door.

Swinging doors are equipped with approved ¾-inch wall-eyes, bolted through the wall, wrought iron hinges, ⅜ x 2⅛, extending three-quarters across the door. The latch and catch are of the same material, properly secured to door and wall. It should be noted that all sheaves, hinges, latches, etc., are to be made fast with bolts, no screws being used except for chafing strips, bumpers and automatic attachments. No fire-door should be hung from a wood frame, even though the frame be tin-clad.

Wooden plugs must not be used in the wall, to which to fasten the supports. All supports must be made of metal. Vertical doors are used where swinging or horizontally sliding doors are impracticable. The construction of such a door is similar to the other types, with the exception of special hangers and trimmings. Fire-doors, to be of service, must be kept ready for use at all times, and surroundings must be kept clear of anything that might interfere with the instant closing of the door when necessary.

Fire-shutters, for windows, are constructed in a similar manner, except that only two 7/8-inch layers of boards are necessary, placed at right angles. The seams are made with the upper sheet lapping, so as to shed water. Hinges are 5/16-inch by 1¾-inch iron, bolted, eye-bolts wrought iron and securely set in the wall or bolted through. An iron bar ⅜ x 1½ is used to secure the shutter shut, with iron catches bolted to shutter. They should always be swinging rather than sliding, whenever possible. For protection against the weather, a coat of asphalt and light-colored paint is used.

Automatic closing devices consist usually of a weight connected to the door by a plaited cord, the weight being slightly in excess of that required to balance the door. The cord is in two parts, held together by a metal link that is fusible at the low temperature of 160 degrees Fahrenheit. The door, being hung on an inclined track, will automatically slide shut when fire attacks the fusible link and releases the weight. Swinging doors are provided with hooks which hold them open, the hooks being equipped with fusible links; and a spring or weight closes the door when fire melts the metal of the link.

A newer method of protecting wall openings, which has received the approval of fire-protection engineers, is the use of wire-glass. This glass has been used extensively for skylight glazing, doing away with the wire screens formerly necessary to protect skylights from breakage. Wire-glass consists of a thick plate of glass reinforced with wire mesh between its surfaces. It was found that when this glass was properly framed in metal, it would withstand extreme heat to a remarkable degree. The mesh strengthens the glass against heat or impact, and also holds in place the broken pieces in case the glass is cracked.

On account of these qualities, wire-glass has unusual merits as a protection for window and roof openings. A window protected in this manner, has the advantage of being always in place, and is more likely to be closed at night. Furthermore, such a window is not subject to disintegration due to weathering, as is a tin-clad wood shutter. Wire-glass windows for fire-protection must be set in metal sashes, riveted throughout, with metal window frames and sills. The disadvantage of wire-glass is its tendency to radiate heat, much as a steel-plate shutter does. Goods piled against a wire-glass window might be ignited by this radiation in case of a severe exposure to fire on the outside. But wire-glass is recommended for all cases except for very severe exposures. Buildings equipped with this glass may be seen in San Francisco, the Merchants' Exchange Building being a good example, also the Berkeley National Bank Building, in Berkeley.

Steel rolling shutters are also to be found on modern buildings as protection for windows and doors, but are not so common as the tin-clad shutter. The Oakland Bank of Savings Building has this type of shutter, all equipped with fusible links, and closing automatically. They are placed only on the exposed side of the building, the north.

* * *

Place a value on yourself, and never mark it down.

First Church of Christ, Scientist, Pasadena (Gravity System Used)
Franklin P. Burnham, Architect

Pouring Concrete By Gravity

By H. W. BRYSON*

KEEN interest is being manifested by Pacific Coast architects, engineers and contractors in the "gravity system" of mixing, distributing and pouring green concrete. The principle is a simple one, and it already has proved its practicability in heavy concrete construction to the extent that a number of leading contractors are using it in preference to all other systems. It is a time-saver and a speed-producer.

The operations of the system are as follows:

First—The mixing of the ingredients, stone, sand and cement, in any suitable batch mixer.

Second—The hoisting by a skip of the mixed concrete to an elevated hopper.

Third—The transferring of the concrete through pipes leading from this hopper to the point where it is desired to be poured.

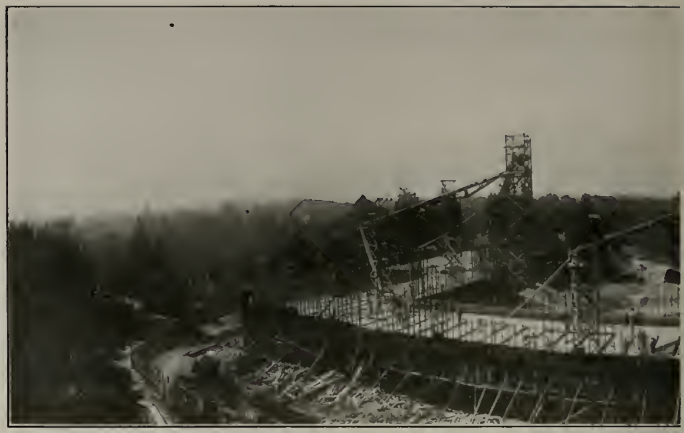
Fourth—The extreme simplicity of design and construction.

The few great points of superiority of this system over the wheelbarrow or cart method of distributing are as follows:

First—The obtaining of the initial set of the concrete on account of the rapid handling of the mass, and depositing the material into the forms in the shortest given time.

Second—A uniform homogeneous plastic mixture due to the large quantity which can be poured at one time.

*Mr. Bryson is president of the Concrete Appliances Company which owns and controls the patents under which the system is being operated. The company is composed of Eastern and Western capital, incorporated under the Missouri laws, with a large capital stock fully subscribed, and with principal offices in St. Louis and Los Angeles. The stockholders are: H. W. Bryson, J. Gysin, F. S. Lyon, F. E. Engstrum, P. A. Rohan, William F. Eicks, W. J. Kennedy, Lee Callahan, Theodore Entman.



Panoramic View of State Normal School, San Jose, Showing Gravity System in Operation, Seven Pipe Lines

Third—The unlimited variation of design of buildings to which it is adapted, from the simple foundation and dam work to the most complicated dome, column and frieze work, such as found on tall buildings and overhanging cornices.

Fourth—The use at all times of a standard equipment for the entire process of mixing, transferring and pouring, and which can be executed at a minimum expense.

Fifth—The saving of breakage of hollow tile and displacement of steel on floor work; also saving of the spilling of concrete and cost of cleaning floors and beams afterward, which cannot be avoided when using the wheelbarrow or cart method. Also the cost of labor and material in building runways.

Sixth—The assurance of deep, narrow walls being perfectly filled.

Seventh—The handling of large quantities, the output being limited only by the mixing and hoisting capacity of the plant, thereby effecting a monolithic construction.

Quality is always to be considered first. This system absolutely assures the quality. Next in importance is that of cost. In this respect the system excels all others by comparison. The old wheelbarrow method of mixing and distributing the cubic yard is from 60 cents to $1; by the use of carts, runs from 40 cents to 75 cents; by the use of "Gravity System" it costs from 15 cents to 25 cents.

This is at once the most apparent saving, but there are many others of vital importance, such as the shifting of planking or platforms and staging, besides displacement of tile, steel, etc. The putting up and taking down of scaffolding is uncertain as to cost and very often a slow process. The patching and replacing of concrete which sets prematurely is avoided. The use of tampers is not required.

Being in Use *F. O. Engstrum Company, Contractors*

Buildings at St. Louis, Denver, Salt Lake, San Francisco, Oakland, San Jose, Los Angeles, Pasadena, San Diego, Agnew, Patton, San Bernardino, California; Las Vegas, Nevada, and State and County structures have been erected by the use of the gravity system, under the supervision of such engineers and architects as Mr. N. Ellery, State Engineer; Mr. Harrison Albright, Hudson & Munsell, Edelman & Barnett of Los Angeles, and the engineers and architects of the Santa Fe Railway and the Southern Pacific Railroad Company. Also Messrs. Mayberry and Parker of Los Angeles have each had the gravity system working under them within the last year or two, and they are very liberal in their praises from the practical engineering and architectural standpoints.

The Concrete Appliance Company, which has the marketing of the gravity system, has, in its organization, the accumulated experience of Eastern and Western practice of the system, consequently has taken the best from each, eliminating those points or methods which were slow or detrimental. In fact, the company, in its license, insists that the application of this system must at least conform to the general specifications and instructions which issued.

There are in general five types of buildings upon which the gravity system may be used. They are as follows:

First—The massive skyscraper office building.

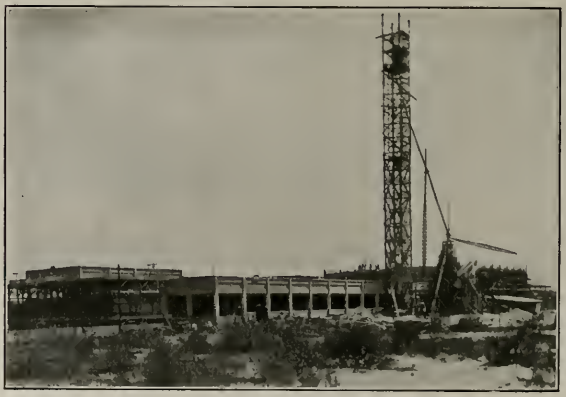
Second—The narrow, tall building.

Third—The long building, such as pre-cooler plants, dams, bridges, street and road beds.

Fourth—The complicated architectural buildings, such as churches, theaters and schools.

Fifth—Heavy warehouse construction.

Trinken Office Building, San Diego, California *Harrison Albright, Architect*
F. O. Engstrum Company, Contractors



Precooling Ice Plant for the Santa Fe Railroad, San Bernardino, California—Square Tower, 172 Feet High, 70-Foot Boom with 40-Foot Auxiliary Boom to Support Distributing Pipe

Precooling Ice Plant for Santa Fe Railroad, San Bernardino, California
Showing Gravity System Delivering Concrete 502 Feet From the Mixing Plant

First Church of Christ, Scientist, Pasadena, California *Franklin P. Burnham, Architect*
Showing Gravity System Triangle Tower Used with Boom, and Single Pipe Line

John Luckenbach Office and Loft Building, Los Angeles, California
Edelman & Barnett, Architects
Showing Tower and Pipe Line for Pouring Concrete

Experience has been had on all of these, and on each type there is only a slight change as to the installation of the system.

As already stated, the results obtained, quality of the concrete, rapidity of handling, extreme low cost of operation, monolithic construction and homogeneous mass, have awakened the keenest attention of the engineering world.

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A Popular Man

"What makes that fellow so popular?"

"He'll listen to your troubles without insisting on telling his."—Louisville Courier-Journal.

The Need of Publicity and Its Value to the Brickmaker*

By ROBERT FROTHINGHAM, New York City

THERE is just one excuse for my being here today, and that is a mutuality of interest. Notwithstanding the dire need of national publicity for the brick industry; which I am bound to believe you gentlemen appreciate, some of you, nevertheless, will be prone to think that my ulterior motive, no matter how much I may dress it in fine speech, and no matter how solemnly I utter "notes of warning," is just, plainly, to get you to spend money out of your individual bank accounts on advertising in the magazines, one of the magazines being mine.

All right—we will leave it that way. I don't pretend to be a missionary for nothing—any more than you do when you use your fine salesmanship craft in persuading some building gentleman that he will make a grave mistake for his own interests if he should fail to use brick instead of wood or cement. You haven't near so much love for him as you have for brick.

Search myself as I may, I can't find any sound reason why I am more anxious for the commercial success of brick than of cement. Indeed, if I consulted only my own interest, I ought perhaps to be more concerned for cement, for the cement manufacturers are already large and successful advertisers in the magazines, and I am bound to hope that our pages, in which they are investing their asset of publicity, may return to them a further success.

But I am not disloyal to those business friends of mine when I come here in the hope of making business friends of you also—any more than a great department store wrongs one manufacturer of hosiery by carrying competing lines.

I do repeat, however, that I come here in the spirit of mutuality of interests. You know what that means. When you tell a gentleman he ought to build of brick, you so honestly believe in the advantage of brick that you know you are serving his interest as well as your own. All honest trade is based on a fair mutuality of interests.

Consequently, I am absolutely sincere when I tell you that for your own interest you ought to pool issues and begin a thorough advertising campaign for brick.

You are manufacturers and merchandisers both. I am a merchandiser only. To advertising and merchandising as a combined business science I have given my whole attention. If I know anything about it, I have got it through experience. I have watched many hundreds of big manufacturers formulate and carry through successful merchandising campaigns, through the aid of scientific publicity. You are not so unlike other manufacturers, your product is not so unlike other products, your conditions as a collection of big and little concerns are not so unlike the conditions of some other industries that the successful experience of other producers may not have a lesson for you.

So, without pretending any more anxiety over your welfare than to say that you and I have a mutuality of business interests, let me tell you how your affairs look to me as an advertising man. I needn't go far into your present trade conditions, further than to show that I know the serious side of them.

Broadly speaking, the brick business has always been in an unsatisfactory condition. There has been comparatively little money in it. But brick has never had its proper share of business here in America.

*Extracts from an address before the convention of the National Brick Manufacturers' Association.

Both wood and cement have increased in vastly faster ratio than brick. You have the deplorable statistics so clearly in mind that I need not go into them in detail.

I need only say that this fact that both wood and cement are outstripping brick seems to me both wrong and needless.

Thus wood, as a building material, costs, I am told, about 25 per cent more than it did ten years ago, so that a wood house costs very nearly as much to build as a brick house—the difference in a $10,000 house being only $500 to $600 in favor of wood—while the wooden house costs so much for painting and repairing that it is really the more expensive.

As compared with the best cement, I understand that the difference of cost between brick and cement is too trifling to be much considered. While, as a fad, cement may have the advantage of novelty, for unquestionable substantiality and permanence, brick has the proof of history. While the best cement may last without giving trouble, brick buildings hundreds of years old attest the strength of your product.

Consequently, if wood, in spite of its present extravagant cost, is still so far ahead of brick, and if cement has in nine years increased its output 700 per cent, while brick has increased only 50 per cent, the causes must be artificial and unnecessary.

In other words, there is no insurmountable reason why brick should be so heavy-footed in this race. There is no intrinsic reason why brick should not now become more favored than wood, even for buildings and houses of a very moderate cost. There is no essential reason why brick should permit its young rival, cement, to continue to walk away from it with such wonderful strides.

Now, as I look at it, there is one practicable way to surmount your present difficulty and make brick move faster. It is to persuade the public that brick offers advantages in both artistic taste and permanency which neither wood nor cement can offer.

Your only possible thoroughfare to the public is the road of persuasion. That is so self-evident that nobody will dispute it.

But how shall you persuade the vast, capricious public?

If you knew everybody who was going to build; if you had an army of accomplished solicitors to call upon these individuals at the psychological hour; if you had trainloads of attractive literature, illustrated in colors, to hand them, then you would give your business a decisive boost. But that method of persuasion is too costly and impossible to be discussed.

There is one other method of persuasion which is neither too costly nor impossible, and will be effectual—that is a united campaign of magazine advertising.

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Open-Air Pulpit for New York

New York will soon have an open-air pulpit, the only one of its kind in the United States. Such an addition to Grace Episcopal Church, Tenth street and Broadway, is being built. It is rapidly nearing completion. In large cities of England, where much outdoor preaching is done, there are many outdoor pulpits. The Grace Church pulpit will be at the end of the chantry, on the Tenth street side, and it will project into the new garden now being made by the corporation.

Both the open-air pulpit and the entrance are gifts, and they correspond in architectural designs. Each is being built of Vermont white marble and will be elaborately carved.

Interpretation of an Architect's Specification

By HOWARD C. LAKE.

THE phrase "or equal" as used in building contracts in prescribing the kind of materials to be used has recently been construed by the Supreme Court of the State of Washington. This case of Camp vs. Neufelder (49 Wash. 426) seems to be one of first impression for, so far as can be found by a search of the authorities, the question has never been adjudicated before. The case seems to be one of considerable interest and importance to the profession on this and other accounts.

The defendant, Neufelder, contracted with the M. Company for the furnishing of materials and the remodeling of a Seattle building by the latter, who sublet the furnishing and putting in place of a part of the materials to the plaintiff Camp. Among the enumerated articles to be furnished were certain prism lights described in the specifications, as follows: "These lights shall be of J. make, or equal." The contract further provided that the work must be performed to the satisfaction of the architect named, who had the right to approve or reject any and all work.

In the course of construction Camp informed the architect that he had several prism lights equal to the J. light which he wished to submit for selection. The architect refused to examine them, stating in effect that there were no prism lights equal to the J. light and that no other or different light would be accepted or approved by him. Camp thereupon put in the J. lights at a cost of several hundred dollars more than lights, in his opinion, equal to the J. lights would have cost, and subsequently claimed this as an extra, filing a lien upon the building to secure payment.

Briefly stated, the foregoing facts appeared at the trial of the action to foreclose the lien and the court refused to allow Camp to prove that there were lights equal to the J. light, that could have been put in at a saving, holding that since the lights were actually put in, and were lights permitted by the contract, no right of action accrued to Camp to recover the extra cost.

Camp appealed from the judgment awarded to the defendant. The latter presented the case in the Appellate Court on somewhat different grounds from that taken upon the trial. Although he did not entirely abandon the position first taken, he contended that a proper construction of the specifications calls for the installation of the J. lights if they are procurable and the substitution of others only in the case that these lights cannot be obtained and that, since the contractors were bound to complete the building to the satisfaction of the architect, his decision on the character of lights to be used was final and the contractors could not complain.

The Supreme Court, however, advanced other reasons calling for a reversal of the judgment and said that the mere fact that the contractor put in the J. lights at the instigation of the architect, did not estop the former from claiming from the owner the loss sustained thereby, saying:

"The architect, while he stood in the relation of umpire in some of his aspects under the contract, stood in the relation of agent for the owner in this instance; that is to say, he was the person selected by the owner to determine the character of the material that should go into the work, and in this respect was the owner's agent, and in the performance of this duty was as much bound to act fairly and impartially as the owner would himself be bound had there been no selection of an intermediary The contractor, therefore, had the right to treat the direction given by the architect as a direction given by the owner, and can recover any loss suffered because thereof if the direction was so far arbitrary as to be without the terms of the contract."

While the court thought that the contractor could have put in lights equal to the J. lights and recovered on the contract by showing that the objections thereto were arbitrary and not in the exercise of an independent judgment, but that this was not his remedy, as he was justified in obeying the architect's instructions and in seeking to recover for the loss, the contractor had the option of either putting in the J. lights or lights equal to the J. lights, and the use of either would have been a compliance with the contract.

Finally the court said that while the contractor had to perform to the architect's satisfaction, yet he had a right to insist that the latter exercise "an independent and honest judgment," and not arbitrarily refuse to consider matters submitted to his judgment. His action was arbitrary and his conduct was held to be so far a fraud upon the rights of the contractor as to entitle him to submit to the courts the question whether or not the lights they desired to substitute were lights proper to be installed under the contract and whether or not they have suffered loss by the architect's action.

Added interest is given to this decision because it was not unanimous. The court stood three to two, and there was a brief but strong dissenting opinion, which said that the subcontractor, Camp, did what he agreed to do for a fixed price and no more. Later the contractor claimed a greater price because he could have furnished another make for less money. The dissenting judges thought that the mere statement of the proposition ought to be sufficient to affirm the judgment given to the defendant-owner by the trial court and because, assuming that the subcontractor, Camp, had a right under the contract to substitute some light other than the J. light, one equal to that light, it was not agreed that Camp should decide upon the substitute, but it was expressly provided that the work shall "be performed to the satisfaction of the architect," and whether he was the agent of the owner made no difference.

"If the agreement had provided that the work must be performed to the satisfaction of the owner," say the dissenting judges, "he would then decide which light was satisfactory, and he might do so arbitrarily, as the architect did, so long as he did so in good faith."

While a rather fine question is presented which permits, perhaps, of strong arguments on both sides, I am of the opinion that the dissenting judges were right. To my mind it is significant and important that no proof seems to have been given or offered that the architect did not act in good faith and that the contract reserved the right to the architect to be satisfied when some light other than the particular one specified was offered as a substitute. As the dissenting opinion well says, the contract was entered into upon the basis of the cost of the J. make and the owner had a right to that particular light or to be satisfied with some other light.

The trial court was right, in my opinion. If the question ever arises again in another jurisdiction I believe the decision is likely to be contrary to the Washington court.—American Architect.

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Architect Edward Foulkes of San Francisco, has been selected to prepare the plans for a $250,000 tourist and commercial hotel at Fresno. The building will be of reinforced concrete, six stories high, and will contain 200 rooms.

Ornamental Concrete Standards for Bridge Lighting

By CHARLES L. ESHLEMAN, in Concrete Engineering.*

UNTIL quite recently, municipalities have been content to invest large sums of money in handsome concrete bridges and viaducts, without voting even the most meager appropriation to cover the installation of a creditable lighting plant. The illumination of the bridge was a secondary consideration, if a consideration at all, and was left to the local lighting company. The lighting company is principally interested in the sale of current and the revenue accruing therefrom, with only a passing interest in the part that the installation might play in the general scheme for "The City Beautiful."

An arc lamp suspended in the cheapest and most unsightly manner will increase the station load just as much as an arc lamp suspended from a graceful shepherd's crook pole, or an arc lamp supported by a classical standard. Likewise, the most homely installation of Tungsten lamps will have the same collateral value as though they were artistically mounted.

The foregoing is the statement of a condition that has been quite common and is not inserted as a criticism of either of the parties responsible for its existence—the municipality or the lighting company. Though not generally admitted, it is true that a popular form of city government has some disadvantages; chief among which is the fact that public improvements are held in abeyance to await the education of a majority of the voters to a full appreciation of the benefits to be derived. On the other hand, corporations naturally extend their philanthropy only to a point where duty and dividends conflict.

Civic pride, an appreciation of the aesthetic and the appeal for "The City Beautiful," have so completely overcome this chaotic condition, that today municipal appropriations cover not only the main structure, but the necessary embellishments.

As it is not our intention to discourse upon the theory of government, or the relation between public and private utilities, we will pass to a brief discussion of the question in hand—Ornamental Concrete Standards for Bridge Lighting.

During the past three years, the number of concrete and stone bridges has increased so rapidly that, naturally, engineers cast about for lighting standards most in keeping with the structure itself. The importance of proper units is easily appreciated by manufacturers of lighting equipment and was first reflected practically by the development of Jandus Luxolabra (ornamental tungsten clusters for street, park and bridge illumination).

During the development of ornamental bridge lighting standards, many experiments were made with both cast iron and concrete, but concrete seemed so admirably adapted to the service, that it has been used extensively.

Concrete standards are molded to correspond to sandstone, marble or granite—in fact, any natural finish, ranging in black, through deep gray to pure white. The color and texture of the structure govern the manufacturer of the standard, as the constant aim should be to have the fittings in perfect harmony with the bridge. The standards are practically indestruct-

*600 Huron Road, Cleveland.

ible and are much more artistic than cast iron jib or goose neck supports, whose presence by day produce discord in otherwise harmonious surroundings and which also require frequent applications of paint to preserve their integrity. They will not oxidize or deteriorate under the worst atmospheric conditions. Heretofore, iron and wood have been the only materials available for electric lamp posts, gas lamp supports, park seats, railings and the like, but as neither of these materials can be successfully treated for outdoor work in its natural finish, there is always a suggestion of artificiality. Owing to its susceptibility to any natural finish, concrete can be made to harmonize with any outdoor surroundings, buildings, walks, curbs, street paving, etc. Even among the trees and flowers, the granolithic finish seems more in keeping with its environments than any other material.

Two general methods of supporting arc and incandescent lighting units are now in vogue; first, goose neck suspensions, second, standard lighting.

The first method predominated for a number of years, but is now being superseded by improved systems in which the lighting unit is supported by an ornamental standard and totally inclosed within large globes. As the latter system now predominates, brief reference might be made to its subdivisions:

(a) Daniels boulevard lighting system (arc lighting).

(b) Tungsten cluster lighting system (incandescent lighting).

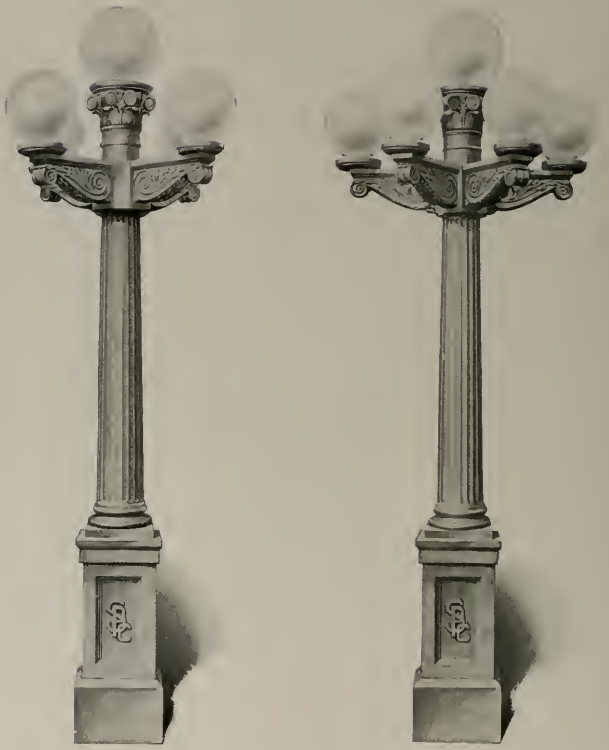
The Daniels boulevard lighting system was designed and patented by Walter E. Daniels, operating engineer of the Chicago South Park Commission, in connection with extensive park and boulevard lighting improvements in that city. The idea is a radical departure from generally accepted standards of ornamental arc lighting and possesses real merit. The inventor has adhered strictly to classical designs and throughout the development of the system has maintained a well-balanced relation between utility and art. Each unit consists of a classical column and capital surmounted by a complete arc lamp mechanism inclosed within a 20-inch opal ball globe. On account of the high intrinsic brilliancy of the light source, the 20-inch sphere is thoroughly filled with light. The large opalescent globe insures freedom from shadows, eliminates the glare of the arc and produces a well-diffused and equal distribution of light. It might be mentioned in passing that the foot-candle intensity of illumination is approximately the same

Concrete Standard

at the base of the column as the different surrounding zones represented by a distance of 10, 20, 30, 40 feet, etc., from the light source.

As the name signifies, the incandescent cluster consists of an ornamental

Concrete Standard



Details of Types of Standards Used on the Harrisburg Bridge

Fig. 2—Night Scene on the Harrisburg Bridge. Note the Absence of Shadows Along the Entire Bridge. Compare the Effect of the Diffused Light with the Concentrated Glare and Surrounding Blackness as Indicated by the White Spots Which Are Arc Lamps in the Railroad Yards in the Background.

Fig. 3. The Same Scene as Fig. 2 in Daylight. Note the Artistic Appearance of the Concrete Standards

supporting column surmounted by a number of arms carrying incandescent lamps inclosed within opalescent globes. The cluster has been in vogue for a number of years, but it remained for the Tungsten lamp to stimulate the growth and popularity of the system. On account of flexibility of construction, the cluster unit has offered the engineer and architect an unlimited field for carrying out different ideas in design.

The writer has carefully studied the several methods of bridge lighting above suggested and most strongly favors standard lighting in preference to goose neck suspensions. As previously outlined, standards for bridge lighting can be made in classical designs of concrete and can be made to harmonize with the structure itself. With standard lighting, it is also possible to use large diffusing globes and use them much closer to the ground than is the case with suspended lamps. This arrangement insures excellent illumination which is the end toward which all efforts have been expended.

Although all illumination is a product of light, it is far from being true that all light is illumination. Light and illumination might be characterized as glare and glow, in other words, illumination is refined light. The formula for refined light is simple enough—proper light source in conjunction with carefully selected glassware produces illumination with even distribution, good diffusion and pleasing effects as by-products.

The foregoing paragraph has primarily been inserted to impress upon the reader the importance of using proper diffusing globes to obtain the best results. More lighting installations are spoiled by the improper selection of glass-ware than from any other cause.

While considering the subject of illumination, let us refer to the night photograph of the Mulberry street viaduct, Harrisburg, Pa. Experts on photography and illumination pronounce it a masterpiece. Note carefully the even distribution of light and the absence of shadows. A boy can be seen in the foreground, 400 feet from the camera, while a quarter of a mile in front, the zig-zag white lines mark the course of automobile headlights.

Although there are at present many installations of concrete bridge lighting worthy of consideration, we will pass to a description of the lighting of Mulberry street viaduct, Harrisburg, Pa. This structure holds the enviable distinction of being the longest and largest concrete bridge in the world and incidentally, carries the best system of ornamental bridge lighting in existence.

There are 41 single-light and 10 7-light standards that are approximately 7 feet in height and were molded in cast iron and gelatine molds, from white sand, white cement and marble dust. Columns are of Corinthian design, surmounted by Ionic capitals. After molding, they were finished by patented process to correspond to the rough bush hammered surface of the structure. The accompanying illustrations will undoubtedly speak louder than words.

Standards are anchored to top of piers or pilasters (supporting bridge railing) 100 feet apart and approximately 5 feet in height, thus bringing the top globe about 12 feet above the line of the roadbed.

Seven-light standards are fitted with six arms, carrying six 10-inch C. R. I. globes inclosing six 100-watt Tungsten lamps and one 14-inch C. R. I. globe, inclosing one 100-watt Tungsten lamp. Single-light standards are surmounted by one 14-inch C. R. I. globe, inclosing one 100-watt Tungsten lamp.

From top to bottom, this structure is an exemplification of the best in design, construction and embellishment—a potent example of that most desirable combination, "utility and art."

Concrete Highway Bridges

"CONCRETE Highway Bridges" was the topic of an interesting address at the recent Good Roads Convention, in Toronto, by James A. Bell, C. E., St. Thomas, Ont., City and County Engineer. At the outset, Mr. Bell made a comparison of the respective merits of steel and concrete bridges. The modern steel bridge of riveted structure, with concrete flooring, is, in Mr. Bell's opinion, the best steel bridge that can be built. Mr. Bell pointed out that an important factor to be taken into consideration is the cost of maintenance. The steel bridge requires care and attention and painting every few years, whereas this is not necessary in the case of the concrete structure. There is another point. The steel bridge is at its strongest the day it is opened for traffic, whereas the concrete is then at its weakest and improves afterwards. Mr. Bell said that the question of reinforcement has revolutionized concrete bridge construction. Many bridges can be erected of concrete and steel and not of concrete alone. This applies particularly to beam and flat top bridges.

The necessity for perfect foundations, particularly in arch bridges, was emphasized by Mr. Bell, who pointed out that beam bridges of 40-foot span and under can be constructed at less cost than arch bridges. The same degree of care is not essential in the foundation work for the beam bridge. A slight settlement in this class of structure is not of any great consequence, but would be disastrous in the case of an arch bridge. Speaking of flat top bridges, Mr. Bell contended that properly reinforced, this class of structure can be employed up to 16-foot span.

Mr. Bell emphasized the need for proper inspection in the erection of concrete structures. Men placed in charge of this work should have an intimate knowledge of the strength of cement and of the method of working it. They should be well posted on the various materials used under their supervision and be able to read plans satisfactorily. Mr. Bell gave an instance from his own experience. Quite recently two contractors approached him and said that they would be able to submit a lower figure on a certain concrete structure if they had the assurance of a qualified man to inspect the work. Asked as to where qualified inspectors could be obtained, Mr. Bell expressed the opinion that third year science men were the most successful and desirable for the work.

Another phase of the subject discussed by Mr. Bell was the desirability of studying artistic effect. Strength and utility were certainly important features to be considered, but it was most desirable to have a "thing of beauty" as well.

In regard to the mixing of concrete, Mr. Bell pointed out how essential it is to have proper quantities and the right consistency, so as to ensure a perfect adhesion between the concrete and the steel. Where this is obtained, the concrete is practically waterproof; otherwise, the water percolates through, rusts the steel and minimizes the strength of the structure.

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Ceilings and Cornices

"A GREAT change has come over the attitude of the public taste in reference to the position which the ceiling occupies as a field for decoration," says a London writer. "This is due no doubt to the greater concentration of the decorative work on the walls, and partly due to the introduction of relief decoration and the trend of taste towards a period of decoration which cultivated this phase of treatment.

But these are not the only causes. One source of the change must be traced to the influence of the Continental artists, especially the German and Austrian art workers, where a studied effort has been successfully made in the cult of the plain ceiling above the high dado line.

"It has been coincident with a greater attention paid to furniture and fitments, and has been deliberately planned to leave these in a measure free of competition.

"It has this to recommend it, that it gives a sense of spaciousness and a breadth of effect to a room which ornament fails to yield, however successfully done.

"The treatment in our own country has not gone so far as it has abroad, but we can see it reflected in many of the modern houses, where a large expanse, embracing ceiling and frieze is left white or cream above a high dado of rich materials and treatment.

"Another aspect of this development is the minor importance assigned to the cornice. In many houses of recent construction, it has been obliterated altogether, or reduced to the lowest minimum; and in normal-sized houses the omission is not to be regretted, as it contributes to wholesomeness and spaciousness, and in a way to the general effect.

"It will be a long while ere we get back to the cornices of long ago, which, in not very large rooms, would girth three or four feet, and possess quirks, arrises and enrichments galore, each picked out in its separate tint.

"They were grand to paint and pick out in twenty or thirty tints with gold etching on the enrichments, and from that aspect the decorator may deplore their exit, but from every other point of view they were obnoxious, over-weighting the room and holding the dust, and when they fell from their first estate to a lower social scale, and whitewash was substituted for paint, they added hideousness to their other failings."

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Hardwood Floors

ANENT the article in the March number of the Architect and Engineer on "Hardwood Floors and Veneers," Mr. J. H. Dieckmann, Jr., of the Dieckmann Hardwood Company of San Francisco, writes as follows:

"Editor The Architect and Engineer:

"We read with a great deal of interest the article in your March issue in relation to hardwood floors, and we take the liberty of adding some very important features which were omitted in that article.

"Take, for instance, the hardwood floors from the hygienic point of view. Everybody knows that a good hardwood floor is clean, healthy and consequently is free of disease germs which in the carpet are the constant menace to health, particularly to the health of children, who always play upon the floor. Why do they not have carpets in first-class hospitals? If medical science does not want carpets, why should you have them all over your home, where, instead, you can have hardwood floors, with rugs which can be very easily cleaned every day or every week. Eliminating carpets, you do away with bugs, moths, disease germs, dust and the drudgery of house cleaning. Another feature of hardwood flooring is that by its use you have made an 'investment' instead of an 'expense' in your house. A carpet begins to deteriorate the moment you cut it to put upon your floors, and it will soon look shabby and wear out; a good hardwood floor will last as long as any house. We would suggest to our architects that they specify more extensively hardwood floors, especially in residences, flats, apartment houses and hotels. Respectfully submitted,

DIECKMANN HARDWOOD CO., "Per J. H. Dieckmann, Jr."

Fireproof Factory Buildings

WHAT is probably of as much importance to the clayworking industry as the fireproof home and office building is a movement now gaining headway toward pretty general fireproof factory building. Present ideas in this connection are of a much wider scope and more general in character than anything heretofore, and include fireproofing factories which in times gone by were thought impossible of such treatment. This fireproofing and fire prevention idea in connection with factory building is taking on two forms now, and whether it gains most in one direction or the other, there is promise of an enormous gain in the aggregate, and out of it all should come enough increased demand for brick and other fireproofing clay products to within a few years double the present consumption. Therefore, it becomes a mighty important thing for clayworkers, one they should not only keep track of, but should get right in with and help promote; that is, help promote the factory fireproofing idea and at the same time direct it toward clay products for fireproofing, instead of letting it drift and be led toward the concrete idea too much.

There are buildings already up, both of the factory type and warehouses, that in seeking fireproof qualities have been tempted toward concrete, and one looking on is inclined to believe that a part of this is simply because those interested in clay products have not been keeping in a close enough touch and urging their products as they should among these new ideas of warehouses and factory construction. The fight has been concentrated too much on public and office buildings and other big structures of well-known character that generally involve fireproofing these days, whereas there is room for great progress in many other lines which heretofore have paid but little attention to fireproofing.

The insurance people have assisted materially in promoting the fireproofing idea, and some of the most striking results aimed at now are to be observed in connection with woodworking industries, where heretofore the fire hazard was so great that the insurance people would sometimes refuse the risk and at all times charge enormous premiums. The insurance people have been giving attention to the subject of how to make these woodworking institutions better risks, and they are now advising forms of construction to lessen the fire hazard. And after the idea had been started some of the factory people themselves carried it further and sought as near as possible absolute fireproofing. In this work brick enters, naturally, but it will probably not enter as much as it should, unless the brick manufacturers look after it, because the concrete people are persistently seeking just such things in pushing their products. One well-known insurance concern making a feature of lumber and woodworking risks has lately sketched out plans for planing mills to lessen the fire hazard which involve brick walls, but does include wooden floors and posts. Another form recommended is to use wherever practical, one-story buildings for woodworking institutions. Make walls of brick and use iron girders overhead and concrete floors, so that there is really nothing to burn but the material kept in the factory.

Another form, one coming into use among the sawmills, is to use steel construction with metal siding, with, of course, a brick fire wall around the boiler room. All these go to show that the tendency in the manufacturing trade is decidedly strong toward fireproofing, and it is not merely a few here and there, but practically every man these days who builds a factory of any kind seeks to lessen in so far as practical the danger of fire, and by so doing also reduce his insurance premiums. When we take into consideration the magnitude of factory industries and of their building

operations as a whole, it is easy to understand the importance of this movement in connection with the clayworking industry, and also it does not require a microscope to see that if the clayworkers themselves are not active and diligent in pushing their material there will be a whole lot of concrete used where brick would be better.

As stated above, this fireproofing idea in factory construction is taking on two forms; one is the general tendency to reduce the fire hazard in the individual structures, and the other is to concentrate certain factory interests in big cities in tenement buildings. There has been planned a building in the line of the new undertaking at Louisville, Ky. It is proposed to erect an eight-story building on the apartment style with a central power house, and have the apartments peculiarly adapted to manufacturing purposes and rent out both apartments and what power is needed to manufacturing enterprises. This idea involves concentrating many lines of manufacture de [illegible], and is made possible through the more general use of electricity for the power agent.

It is argued that such buildings can be erected and be the same ornament to a town that apartment houses and office buildings are, and by being provided with both passenger and freight elevators and other requirements of certain manufacturers can be made better adaptable to many lines of manufacturing than are individual plants which must seek the suburbs now and then to avoid being condemned as nuisances. Naturally, this new idea involving factory apartments or tenement buildings carries with it as a strong feature the fireproofing idea. One of the first essentials for such a building is safety from fire, the same regard, in fact, that is shown in the erection of the modern office building. Naturally, if this idea spreads and becomes popular and there is to be an epidemic or boom of building factory apartment buildings in the big cities, it would mean a whole lot not only to brick manufacturers, but particularly those clayworkers specializing in hollow clay blocks and other fireproofing material. This idea seems to be more or less in the experimental stage yet and it remains to be seen just how popular it will become, and its popularity, of course, will determine further development of the plan.

It is not much difference, however, which form the fireproofing idea takes. The most important fact to begin with is that manufacturing industries down to and even including woodworkers are seeking fireproof construction, and to erect buildings that at least have embodied in their makeup some features that will assist in preventing fires; so there is, either way we take it, a great future development in sight for fireproofing material and for clay products, if it is properly followed up.

The form it might take has some bearing on the particular class of material that may be called for more. If it is to be a downtown tenement or factory apartment building there will be a call for lots of ornamental clay products, as well as purely fireproofing material, and there will be a need for more of the hollow blocks for partitions, flooring, etc., than if the individual factory plan is continued as the strong feature. Indeed, it would seem that the factory apartment building idea will be the best for the clay products people, and it is one that they might well give attention to, studying with a view to assisting in its promotion. For it would involve more thorough fireproofing, whereas the individual factories will go in more for fire prevention than fireproofing, and use lots of steel framing and iron siding together with concrete floors. There may be involved, though, even in the individual factory construction, a great use for brick and fire walls and factory walls, and probably a little later on there will be embodied in the individual factories some fireproofing ideas in connection with flooring that will help out, too.—Clay-Worker.

An Expensive Hobby

CHARLES ROTHSCHILD'S pet hobby is that of collecting fleas, and at the Tring Park museum are to be seen cabinets containing over 10,000 specimens of the "uncomfortable insects," of all forms and sizes, gathered from nearly every corner of the world. Every mammal and bird is said to have a particular kind of a flea, and very many have several different kinds. The cat flea, for instance, is different from the dog flea, and the dog flea from the sparrow flea, and each in turn is different from the "Pulex irritans," the scientist's pet name for the flea which is such a source of trouble to human beings. This collection of fleas is probably the most complete of its kind; but there is one flea missing which Charles Rothschild most covets, and that is the flea of the Arctic fox.

Only two perfect specimens are known to exist in collections, and with a view to finding a third Mr. Rothschild two years ago commissioned the captain of the Forget-Me-Not, an Arctic trawler, to hunt for the specimens. But the captain evidently returned flealess, for in August last Mr. Rothschild offered a reward of £1,000 for an Arctic fox flea—a reward which the writer believes has yet to be earned. The fleas at Tring Park, like the other inmates of the "zoo," have been collected through agents, and whenever an expedition is about to start for a protracted journey through a foreign land Mr. Rothschild usually engages one of the party to collect specimens of the insects from any species of mammal or bird encountered.

Although Mr. Rothschild does not take a very active interest in politics, he is an extremely popular man in the House of Commons. He is one of those quiet, kindly, unassuming men with whom it is a real pleasure to talk. He is a capital conversationalist, especially when talking of his great hobby, or to a man who, like himself takes a keen delight in the recreations of shooting and hunting.—House Beautiful.

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Oakland City Hall Competition

THE Oakland Board of Public Works, with the assistance of Architect John G. Howard, has made its selection of architects who are to compete for the $1,000,000 city hall. The list numbers twenty-five members of the profession, twelve of which are well-known San Francisco architects, one an Oakland architect of recent residence and the remaining dozen are from Eastern cities.

The three firms who will receive a bonus of $1,000 each are McKim, Mead & White of New York, Peabody & Stearns of Boston and Cass Gilbert of New York. These will be ineligible for any other than the first prize which is $5,000. The other contestants will be eligible for the first prize as well as the ten others of $1,000 each. The program calls for the submission of plans by the first of July. The list follows:

Bakewell & Brown, San Francisco
Bliss & Faville, San Francisco
Arnold W. Brunner, New York
Delard & Aldrich, New York
J. H. Freedlander, New York
Frost & Granger, Chicago
Louis P. Hobart, San Francisco
George W. Kelham, San Francisco
Guy Lowell, Boston
H. Van Buren Magonigle, New York
McDougall Bros., San Francisco
Meyer & Reed, San Francisco
William Mooser, San Francisco
Louis C. Mullgardt, San Francisco
O'Brien & Werner, San Francisco
Palmer Hornbostel, New York
Rankin, Kellogg & Crane, Philadelphia
Pell & Corbett, New York
Loring P. Rixford, San Francisco
Boyd Van Benthuysen, San Francisco
Albert Randolph Ross, New York
Tracy, Swartwout & Litchfield, N. Y.
Ward & Blohme, San Francisco
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Note—The results of the February-March competition work will appear in the April Architect and Engineer.

Competitions

The competition for a schoolhouse at San Mateo has resulted in the selection of the plans of Architects Havens and Toepke of San Francisco. The building will be of reinforced concrete and will cost approximately $100,000. There were some seven sets of plans submitted by San Francisco, Oakland and Berkeley architects.

* * *

The Druids of San Francisco are receiving competitive plans for a lodge building to cost in the neighborhood of $75,000.

* * *

A number of architects have made drawings for the proposed Odd Fellows' Home, to be erected by the State organization near San Jose. The buildings are to be of frame construction, and either the Spanish or Mission style of architecture will be followed. The plans of Architect Ralph W. Hart and J. H. Baehrer, of San Francisco, were given first award, while Cummings and Weymouth of Oakland were given second prize and Wolfe & McKenzie of San Jose, third.

Result of Competition

THREE plans were submitted in competition for prizes offered by the Architect and Engineer for the best design of a reinforced concrete boathouse to be erected at Lake Merritt by the Oakland Park Commissioners. The judges were Mayor Frank K. Mott, the members of the Park Commission —Messrs. Manuel, Edoff and Gould—and Architect C. W. McCall, the latter representing this publication.

There was apparent merit to all three designs, and the committee experienced some difficulty in making the selections. The competition was open to draughtsmen only. First prize was awarded to Theophile S. Boehm of Oakland, while the second and third prizes went to Miss Jessie L. Spangenberg of Oakland and A. H. Boucke of San Francisco, respectively.

* * *

Architect Oliver Sues Realty Syndicate

Architect D. Franklin Oliver of San Francisco has brought suit against the Realty Syndicate of Oakland to recover 3½ per cent commission claimed to be due for plans and specifications furnished the Syndicate for a ten-story store and office building. Only two stories have been erected, but the Syndicate is now planning to complete the structure, and it is said has engaged the services of Architect Woollett. The latter is a member of San Francisco Chapter, American Institute of Architects, the ethical code of which makes it unprofessional for a brother member to accept work until a satisfactory settlement has been made with the architect previously engaged on the job. Mr. Woollett, however, denies that he has any signed contract with the Syndicate. The amount of Mr. Oliver's commission is something over $7,500.

* * *

Common Brick Market Demoralized

THE common brick market in San Francisco is in a bad way. The price of bricks has become so low that several concerns have been forced to close their plants. The price of common brick, which has been unsteady for nearly a year past, is now as low as $5.75 f. o. b., with no chance for a rise and little chance for a decrease. A local manufacturer states that the bricks cost 50 cents a thousand to load, $1.75 to get them into the city and $3.50 is left for the production. This low price has come as the result of throat-cutting competition, caused by over-production. San Francisco firms manufacture, or rather can manufacture, 300,000,000 common brick a year, while the consumption is only 75,000,000. The local brick manufacturers cannot send their bricks to other markets on account of the excessive freight rates. It therefore remains for San Francisco to use her own production of common brick and to buy of the firms which can produce the cheapest. Only three out of eighteen manufacturers can make common brick at the present price, and they are running their plants to the full capacity.

In an attempt to regulate the brick market for the benefit of all, the question confronts the producer: "What are you going to do with the 225,000,000 bricks of over-production?" It was suggested that each dealer should contribute a certain sum of money to a fund out of each thousand brick sold and when a small firm had to close down the owner would be supplied with a certain percentage according to the size of the plant. The plan was hardly thought feasible, but when taken to an attorney was

given its death blow by being pronounced contrary to the Cartright anti-trust act.

It would appear now that the only way out of the dilemma is for some capitalist to buy out all of the brick companies in San Francisco and vicinity and to produce only enough brick as the market demanded.

* * *

Wall Paper Versus Tapestry

ACCORDING to some exponents of the modern school of house furnishing in Germany, the wall paper is condemned on account of the fact that it is not what they term "genuine" material. On this subject Professor Schulze, the head of the Royal Museum in Krefeld, writes as follows: "One often hears it said today that the character of our homes is not as comfortable as in former times when the walls were covered with wood or tapestry. Sometimes the decoration of the walls was given entirely into the hands of a painter, but woven stuffs and wood were generally used to cover the walls before the introduction of wallpaper. By some critics today wallpaper is regarded as a substance the banishment of which from our houses is a desirable end to be aimed at. This condemnation of wallpaper is not right, as although no one is able to deny that wood paneling, silk and tapestry form wonderfully beautiful wall decoration, it is foolish to condemn other materials of proved worth. The war cry of 'genuine' material that the enemies of wallpaper employ means that the pasting of the walls with paper is more or less a deception, but in the wall of a house the only genuine part in actual fact are the stones of which it is built. In a word, the argument does not hold good, for even when wood or any woven stuff is employed, it is applied to the walls, speaking broadly, in much the same way as paper, therefore the expression 'genuine' material in the sense attached to it by those who have no good word to say for wallpaper is nonsense. But this is only one side of the question. The man who does not live in his own house, and this is the case in which the great majority find themselves, must take into account that when the lease runs out he will probably have to change his dwelling place. Suppose now he has fixed tapestry instead of wallpaper, what is he going to do when he changes into another house? Remove the material and take it with him? The probability is that it would not fit its new surroundings, and, further, so many present-day materials fade so quickly that after a short time the places where pictures have been hanging present a totally different color from the rest of the room. Taking all these facts into consideration, surely the modern wallpaper is one of the best materials possible for modern conditions."

* * *

He Had His Reference

THE wife of a wealthy Chicago man, who not long since purchased a new home, had occasion to enlist the services of a new floor-polisher.

"I hope you understand your business," said the lady of the house.

"I should say I did," said the man, with a grin. "If you have any doubt on that score I'd suggest that you inquire at the Morton House on this block. Why, on the floor of the drawing room alone eight people fell and broke their legs last winter; and a woman slipped down the big staircase and fractured both her arms. I polished those floors."

An employee who is always looking at the clock rarely sees a bank account.

Among the Architects

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Seven Story Structure

Plans have been completed for a seven story and high basement brick hotel building, to be erected at the southwest corner of Sutter and Taylor streets, San Francisco, for Dr. Beverly MacMonagle, at a cost of $50,000. The architect is N. W. Sexton. The structure will be in the colonial style, with an exterior of red pressed brick and white marble trimmings. At the sixth story, extending around both fronts, there will be an iron balcony. The structure will contain 70 rooms connected with bath rooms, a large reception hall on the first floor and a billiard room in the basement.

Regents to Build Hotel

The regents of the University of California have received tentative plans for a hotel to stand on the land owned by the university in the north line of Sutter street between Kearny and Montgomery streets, San Francisco. The lot is irregular, with a frontage of 105 feet on Sutter street, an average depth of 150 feet and a frontage of 55 feet on Hardy place and an additional frontage of 102 feet on Trinity street.

San Francisco Chapter, American Institute of Architects

A special meeting of San Francisco Chapter, American Institute of Architects was held at Tait's Cafe on Thursday evening, March 17th. After dinner, the meeting was called to order by the president, William Mooser.

Members present were: William Mooser, Sylvain Schnaittacher, William H. Crim, Jr., B. J. Joseph, August G. Headman, Henry C. Smith, Charles W. Dickey, Louis Mastronasqua, E. A. Coxhead, Clinton Day, William Curlett, Edmund Kollofrath, Albert Schroepfer, James W. Reid, William A. Newman, G. A. Lansburgh, John D. Hatch, E. J. Vogel, Matthew O'Brien, W. B. Faville, John Bakewell, Jr., John Galen Howard, George T. Plowman, Walter H. Parker and P. Righetti.

The minutes of the special meeting of February 17th were read and approved.

Mr. James W. Reid for the committee on entertainment and reception reported that his committee had held two enthusiastic meetings with a full attendance, and was working hard on plans for providing a fund to arrange for the entertainment of delegates to the national convention.

Mr. Bernard J. Joseph for the committee on legislation, stated that his committee had held two meetings; that the principal work accomplished so far had been a discussion of the Law of 1872 and that the committee had submitted a draft of a substitute for that law, which substitution was read. On motion duly made and seconded, it was ordered that some such substitute law be submitted for consideration at the joint meeting of the Southern California and San Francisco chapters.

Mr. E. J. Vogel for the building laws committee, reported that the amendment to the new building law regulating the area to be occupied by flat buildings had been passed and had received the signature of the mayor.

In the matter of the Panama Pacific International Exposition, the secretary reported having had correspondence with the secretary of the exposition company, and that a committee of five had been appointed to confer with a committee from the chapter and that an early date had been set for such meeting.

In the absence of Mr. G. B. McDougall, a written report was submitted on the matter of the Oakland City Hall competition. After considerable discussion regarding the invitation to the paid competitors, it was moved and seconded that a vote of thanks be given the chapter committee upon the culmination of its labors in connection with this competition and that the report be ordered received and placed on file. The report follows:

"Your committee on competitions begs to report on the City Hall competition of Oakland, as follows: The Board of Works and its architectural advisor, Mr. John Galen Howard, have decided on the following program:

"'Three architects of the highest standing are to be specially invited and paid. In addition to these, the privilege of competing will be granted to not over twenty-five architects, or firms of architects, who shall have signified in writing their desire to compete, whose ability and experience in important work justifies the board in considering them eligible.

"'All architects who desire to compete will send written application dated on or before March 21, 1910, containing the necessary information as to experience, important work executed, etc.'

"Your committee met Mr. Howard and discussed the matter further and was told that the three architects would be paid $1,000 each; and the firms invited would be McKim, Mead & White, Cass Gilbert and Peabody & Stearns.

"Prizes: The first prize will be appointment as architect for the entire work, at a commission of six per cent, as your committee suggested. Then five prizes of equal division of $2,000 each.

"Your committee wishes to place the matter before you for you to decide if all the conditions should be accepted by this chapter. In the meantime your committee awaits instructions."

Messrs. Harry L. Cunningham, Matthew V. Politeo, Oscar Haupt, L. J. Devlin and Thomas Smith were unanimously elected chapter members.

A communication was received from the Southern California chapter, congratulating the San Francisco chapter for having been successful in securing the next institute convention for San Francisco. The reading of this letter was received with applause and the secretary was instructed to suitably acknowledge the same.

A communication from the American Federation of Arts, regarding an amendment to its constitution, was read and the secretary was instructed to advise that it was the sense of the chapter to favor the proposed amendment.

Communications were ordered received and placed on file from the office of the Supervisor of Census; the American Academy in Rome; the First Annual exhibition of the Architectural Arts League and Atlanta Chapter, A. I. A.; from the 16th Annual Exhibition of the T. Square Club and Philadelphia Chapter, A. I. A.; from the Colorado Chapter,

A. I. A., a copy of the minutes of its February meeting and from the Royal Architectural Institute of Canada, the proceedings of its convention.

A communication from Mr. Glenn Brown, secretary of the A. I. A., requesting the chapter to make a contribution to the fund of the McKim Memorial in the American Academy in Rome, resulted in a discussion as to the best manner of contributing to the fund. As it was not deemed advisable to impair the chapter's funds at the present time, on motion duly made and seconded, the secretary was instructed to write to each member of the chapter and request a contribution of $2.00 toward the fund; and that the sum total be forwarded to Mr. Brown as the contribution from the San Francisco chapter.

Los Angeles Chapter Meets

The Southern California Chapter of the American Institute of Architects held its March meeting at Levy's Cafe, forty-seven members attending. Among the guests present were Messrs. W. S. Eames of St. Louis, a past president of the Institute, Seward A. Simons, a well-known local attorney, Charles M. Finch and Silas P. Burns. After the usual dinner and business meeting, Mr. Eames gave a short address, followed by Mr. Simons on "The Architect and His Client," and Mr. Finch on "New Mexico Jails." Mr. A. F. Rosenheim talked on his recent visit to the East.

Mr. J. P. Krempel, on behalf of his committee, made a report of progress on the chapter house project. Mr. R. B. Young reported a detailed scheme decided upon by his committee on the entertainment of the San Francisco Chapter in April.

Mr. Paul J. Van Trees was announced elected to membership. Mr. S. P. Burns, an Institute member elsewhere, was declared a member by the board of directors without balloting.

The invitation of the Riverside Portland Cement Company to visit the Crestmore plant was accepted, and May 7th fixed as the date.

Engineers and Architects Association

The March meeting of the Engineers and Architects Association of Southern California was held Tuesday evening, March 8th, at Hollenbeck Cafe, Los Angeles. Mr. J. B. Lippincott presided by request, in the absence of the president. The entertainment of the evening was an interesting and instructive talk by Mr. W. B. Clapp on the work of the U. S. Department of Hydrography and its part in determining the water resources of the country. The address was supplemented by a large number of illustrations thrown on the screen by the reflectroscope.

Germans to Have Pretentious Home

The German House Association of San Francisco will build an imposing structure on the association property at the northwest corner of Polk and Turk streets. The plans for a building, estimated to cost $250,000, have been made by A. Reinhold Denke, architect. The lot to be covered is a full 50 vara, 137:6 x 137:6 feet, and 35 societies composed of citizens of German extraction have taken shares for the house.

The plan for the proposed structure includes a large ballroom and auditorium with stage, capable of seating 1,800, besides two smaller auditoriums and stages capable of seating 900 each; a large banquet room, billiard rooms, cardrooms, ladies' parlors and library and reading rooms and accommodations in the way of lodge and ante rooms for 75 lodges and societies. The building will be class A throughout with every modern convenience.

Talks by George Wagner

The San Francisco Architectural Club has engaged Mr. George Wagner of the Lewis A. Hicks Company to give a series of six or more lectures on "Estimating and Building Superintendence." The lectures are of a practical nature.

Mr. Wagner will take up the subject of estimating in detail as to cost, quantities, etc., and will also give short methods of arriving at approximate estimates.

In building superintendence, matters which are usually slighted, will be pointed out, and examples explained of how to make simple tests and distinguish different grades of materials.

The lectures will be held each Wednesday at 8:15 p. m. in the club rooms, Commercial Building, 833 Market street.

Architects Injured

Three of the architects who attended the March meeting of Los Angeles Chapter, A. I. A., were injured in a street car accident occasioned by a Salt Lake freight train crashing into a Pasadena car at the crossing on Aliso street. W. A. O. Munsell of the firm of Hudson & Munsell suffered lacerations on his hands and legs; John C. Austin's face and body were cut and bruised, and E. C. Kent suffered a broken arm. All were removed to their homes in Pasadena. That they escaped without more serious injury seems remarkable, as the car was totally wrecked.

City Not Responsible

City Attorney Long of San Francisco has advised the board of supervisors that the city is not legally liable for architectural fees claimed by M. J. Lyon for plans drawn for the Madison school. The opinion applies also to other claims for school plans prepared by several architects under appointment of the Gallagher board.

Residence for Alhambra

Architects Hudson & Munsell of Los Angeles have prepared plans for a fine residence at the corner of Wilson and Los Robles avenues, Alhambra, for Mr. Euclid Martin. On the first floor will be a large living room, 17 x 30 feet, den, breakfast room, dining room, pantries, etc., and the second floor will contain a sitting room, four sleeping chambers, three bathrooms and a servants' room. The floors will be of oak throughout and the interior finish will be Peruvian mahogany in the living room, Spanish cedar in the dining room and den, and oak in the breakfast room. The finish in the second story will be sugar pine and white enamel except in the sitting room, which will be finished in Spanish cedar. There will also be five mantels, one of old gold pressed brick and four of tile. The stairway will be of Peruvian mahogany with oak treads.

Meyer Opens Oakland Office.

Architect Frederick H. Meyer of San Francisco has formed a partnership in Oakland with Walter D. Reid, formerly of Dickey and Reid, and the two will be associated in all future work in the Trans-bay cities. Mr. Meyer, of course, retains his large San Francisco clientage, the partnership with Mr. Reid being independent of the San Francisco office. Meyer and Reid have established offices in the Oakland Bank of Savings building.

Nat Ellery for Governor.

The name of State Engineer Nat Ellery is being used as a possible candidate for the governor's chair in California. If Ellery makes as good a governor as he has engineer, the people need have no hesitancy in nominating and electing him. But Ellery's chances of winning the plum seem quite remote at this writing.

Another Orpheum Theater for Architect Lansburgh.

Architect G. Albert Lansburgh, who designed the Orpheum theater in San Francisco, has been commissioned to prepare the plans for a $350,000 playhouse for the same company in Los Angeles. It will be a combination theater and office building. The plans are already well advanced.

Sylvain Schnaittacher Honored

Architect Sylvain Schnaittacher, secretary of San Francisco Chapter, American Institute of Architects, has been appointed member of the State Board of Architecture (Northern Division) to succeed Henry A. Schulze, resigned.

More Time for Removal of Shacks

Temporary buildings erected in San Francisco since the fire in violation of the city's fire ordinances have been granted a new lease of life, the board of supervisors by a unanimous vote having extended the time for the removal of such buildings until May 1, 1911.

This annuls the extension of time granted by the old board of supervisors in 1908, when an ordinance was passed instructing the board of public works to secure the razing of all temporary buildings within the fire limits by May 1st of the present year.

Fire Marshal Towe and Health Officer McNutt of the board of health were the only ones to raise serious objections to the extension.

Stationary Engineers' Convention

The National Association of Stationary Engineers will hold its seventh annual state convention in Los Angeles from May 23d to May 28th. The Southern California association has rented the fourth floor of the Hamburger building for a monster mechanical exhibit which will be held in connection with the convention.

Machinery and manufacturers' supply houses have responded so generously to the request of the engineers to help make this exhibition a success that space is almost completely taken up.

F. J. Fisher, past national president, and chief engineer of the Los Angeles water department, is chairman of the convention committee.

Reduces Air and Light Space

Mayor McCarthy of San Francisco has approved the ordinance reducing the air and light space for flat buildings to 20 per cent of the area of inside lots and increasing the amount of ground which may be covered from 60 to 80 per cent. In signing the ordinance the mayor stated that the building and building trades interests demanded the change in spite of the opposition of the anti-tuberculosis crusaders.

New Partnership

Architect John T. Vawter has become associated with Architect A. R. Walker, with offices at 216 Wright & Callender building, Los Angeles. Mr. Vawter comes from the University of Illinois, where he held an instructor's position.

New Architects

At the last meeting of the State Board of Architecture (Southern Division) certificates to practice architecture were granted to Jacques Sindorf and F. M. Ashley, now with Parkinson & Bergstrom, Security building, and Albert O. Wight of Inglewood.

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GOING EAST FOR ARCHITECTURAL TALENT

It seems to us that in sanctioning Mr. John Galen Howard's plan to invite Eastern architects to compete for the Oakland city hall, the San Francisco Chapter, American Institute of Architects, has quite reversed its previous attitude, which has been to encourage and promote the interests of California architects in preference to outside talent. The three New York firms invited by Architect Howard are to be paid $1000 each for their trouble. This sum is but a drop in the bucket, figuratively speaking, to the wealthy men who have been asked to compete, yet it is sufficient, probably, to stir them into activity, and pay the wages of a couple of good draughtsmen for a few weeks. In our opinion, this same $3000, with a little added, could be put to better use by dividing it among the unsuccessful local competitors, so that they would at least be partly compensated for their time and labor. Mr. Howard argued that unless the Eastern architects were guaranteed a reasonable sum, they would have declined to compete. Well, let them stay out of it, then. Are they so much better than our own architects that we have to pay them something, regardless of the merits of their work?

We have always maintained, and shall continue to, until convinced to the contrary, that we have just as capable men here in California as the East can produce. The trouble is our architects haven't had the opportunities to display their talents. Now that an opening presents itself, what do we do? Go East with a guarantee to three leading firms. The latter are to submit drawings under a nom de plume, the same as the twenty-five ambitious California architects, but they have the advantage of being paid a thousand dollars apiece whether their work wins a prize or not. The most the local competitor may hope to receive is a stereotyped "thank you," unless, by some mysterious chance, his plan should happen to win.

RAISING THE ARCHITECT'S FEE

The action of the American Institute in raising the fee of the architect is entirely reasonable, and does not deserve the criticism given it by the public press. A minimum charge of 5 per cent was established not only by the profession in the United States but abroad when the architect and the builder separated and the work of the former became a profession. The rate, where it was observed at all, became a maximum rather than a minimum rate, and will still be so considered. But it was established by those architects who had enough business sense to keep track of the cost of work in their offices. It was paid them by owners who were willing to obtain the best service and pay for it. It never was exorbitant on any work. It did not pay on many classes, particularly residences. As a percentage for service the fee of the architect has been one of the reasons for the slow growth of appreciation accorded him by the public. To the "man in the street" a profession that worked for 5 per cent gross could not be very valuable. A contractor working on percentage must have 10 per cent net, and the printer is doing business for "a measly eighth of 1 per cent" unless he can add at least 25 per cent for profit. The only "laborer" who estimates his hire at 5 per cent is a bill collector, and if the debt is a hard one to collect he usually takes half. Some architects are wealthy, but it has not been his percentage, but the shrewd investment of his meager profits that has made him so.

These are the cold facts about the architect's percentage, and the raise of the minimum rate to 6 per cent means nothing but that the architect must at least pay the shop cost of his work or go out of business. And 6 per cent does not much more than pay shop cost except on very large or very plain structures. These, if he is so fortunate as to obtain them, go to make up the deficit on residences and churches upon which the whims as well as the demands of the client take up much valuable time in consultation and study, as well as in making and remaking of drawings to meet the continually changing demand of the client, in the drafting room. When architects adopt the lawyer's rule of charging for each consultation, and a fee for each preliminary sketch, it may be possible to make money at a minimum fee of 6 per cent.

POSTAL SAVINGS LEGISLATION ASSURED

It has sometimes been remarked that architects, as a class, were out of things. That is, in great reform movements, undertakings and such affairs, you'll find doctors and lawyers and journalists in the van, leaders, but seldom will you see the name of an architect. On the other hand, it may be a very great professional virtue on the part of our architects, that of designing buildings and minding their own business. But, frankly, we would rather see them mixing in public affairs, taking an active part in things generally. This tendency toward aloofness on the part of the architects perhaps but accentuates and makes more noticeable the very great activity of the one man in the profession who is into everything, so to speak, and generally a leader at that, Fitzpatrick of Washington, D. C.

Just now the Minnesota papers are congratulating that State upon the passage of the Postal Savings Bill through the Senate and its more than probable passage by the House. They look upon this as a feather in the State's cap, because that legislation has been brought to a head very largely through Mr. Fitzpatrick's efforts, and he is an old Minnesotan. By the same token surely we may congratulate the profession because one of its members has brought to pass such notable and far-reaching legislation!

HEATING AND LIGHTING

Successful Heating of Our Homes

By A. G. King in the Architect and Builders Magazine

IT IS safe to say that seventy-five per cent of those who are using modern steam or hot water heating apparatus and vapor or vacuum heating systems in their homes do not attend or fire the boilers correctly and hence fail to obtain from the apparatus the marked degree of efficiency the plant is capable of producing.

Notwithstanding the fact of such prevailing mismanagement owners seem ever ready to complain about the excessive amount of coal they claim it is necessary to burn to maintain the temperature in the home at a comfortable degree. In buildings of sufficient size to warrant the appointment of a fireman to attend particularly to the heating apparatus there cannot be much dissatisfaction expressed as this employee is sure to readily discover the best method to adopt for firing the boiler inasmuch as any saving in fuel lessens his labor in handling coal and ashes.

With the steadily increasing cost of all kinds of fuel it becomes the more necessary that the proper care is exercised in its use. The manufacturers of heating apparatus have long ago realized the importance of the feature of economy in this respect and as a result have largely increased the efficiency of their product. In the case of the low-pressure steam boiler it was only a few years ago when but five or six pounds of water evaporated per pound of fuel represented the limit of good service. Some of the low-pressure boilers in use today have doubled this record of efficiency and many of those ordinarily good in construction will evaporate nine or ten pounds of water per pound of fuel. Constant experimenting along this line has wrought wonderful changes in developing the efficiency of the house-heating boiler.

While a large portion of the waste is due to faulty firing, a considerable part is the result of conditions dating back to the time when the plant was originally installed. Too many house-owners, builders, and in some cases the architects also, we are sorry to say, act on the principle that "a boiler is a boiler" and "a heater a heater," and if of a size claimed sufficient to furnish the necessary heat no further requirements must be considered. As a result quite frequently most any old type of boiler or heater is installed, providing, of course (and we almost neglected to state this) that the price is low. In cases where such judgment is exercised, it is almost impossible to get economical results from the work, yet a great saving in cost of operation can be secured by the manner in which even such a boiler is attended.

A common error lies in the matter of draft. The chimney flue itself and the

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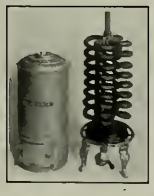
manner in which the dampers are operated are largely responsible for much of the waste in fuel. Quite a few architects and heating contractors have formed the opinion that a sharp draft caused by the great velocity induced by a high chimney is the proper condition for economy. This we hardly think is true for the reason that too strong a draft will pull the hot gases into the chimney in the most direct manner, thereby rendering a large portion of the interior heating surfaces of the boiler of no effect, the gases passing into the chimney flue at a high temperature. This condition should and could be avoided by using a chimney of larger area and so operating the dampers from passing into it. By this method the gases are burned in the combustion as to check any excess of the hot gases chamber of the boiler, the heat flowing against and over all of the heating surfaces.

A homely illustration of this action is found in the ordinary cook stove or kitchen range. In her desire to obtain a high degree of heat for baking or other purposes, does the good house-wife open all of the direct drafts? No, for while she may open them for a time in order to secure a good, bright and hot fire, she closes the chimney damper to insure that the heat will not escape by way of the chimney flue, but will be confined in the stove, circulating through all parts and over all the surfaces to be heated.

As the furnace, steam boiler or hot water heater is the heart of the heating system, we should see, in order to insure economy, that the points necessary to economy, are secured in the heater selected for the work. A horse is judged by his good points, likewise all other kinds of stock, and in the mechanical world the same standard of judgment should prevail. Before discussing the points that are required by a boiler to make it an economical one in service, there is just one more thought to which I would call attention.

The average house-heating boiler consumes, in two seasons, an amount of coal which more than equals the first cost of the boiler. The average hot-air furnace, by way of comparison, consumes in one single season coal to more than the value of the furnace. To those whose income is derived from investment in stocks or bonds a return of from four to six per cent is considered good. The manufacturer who can show a clean profit of ten per cent after all the material, labor and overhead charges incident to the business have been paid, looks upon the business as a profitable undertaking. We hardly think it necessary to carry the comparison further. These same bankers, capitalists and manufacturers will continue to place and use in their homes heating apparatus which are wasting from one-eighth to one-third or more of the fuel required, or from $12.00 to



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$35.00 out of every $100.00 paid for coal, etc.,—a condition which, if allowed to prevail in their business, would ruin them financially

The vast majority of the steam and hot water heating plants now in use and which were installed eight or ten years ago, or prior to that time, could be reconstructed today in such a manner that a saving of twenty-five per cent would be attained in the fuel used. Many of them with but some minor changes in their construction could be made to effect a saving of ten per cent. As this rate of gain represents an income from year to year after the expenses of the alterations have been paid, would it not prove a good business investment?

What are the points which make a boiler effective, economical and lasting or long-lived? In answering this question let us begin at the bottom or base of the boiler, discussing each part separately.

First: A good, deep base or ash-pit, in order to avoid a frequent warping or burning out of the grate or grate bars. The ash-pit should be sufficient in area to accommodate the ash of the coal from one day's firing without clogging under the grate. A few years ago many boilers were manufactured which had only a six or eight inch base. Today in most of them the depth of the base is double that size. If the ashes are not allowed to accumulate under the grate the castings will last an indefinite time, while, on the contrary, if they are allowed to pack and remain in the ash-pit it will require but a few hours' time to warp or burn out the bars, ruining them entirely.

Second: The grate itself is an all-important part of the boiler, one making for economy or extravagance. If I were asked what two points of a heating apparatus are most essential to its successful and economical operation I should say the grates and the draft. The former should be so constructed as to carry the coal without sagging or without waste due to the falling of unburned fuel into the ash-pit. If a large size of coal entirely is to be burned, grates of so-called open construction may be used. Of later years smaller anthracite coal, such as the pea coal size, has been largely burned in house-heating boilers, in which case grates or grate bars of special construction are required to prevent waste.

Third: The fire-pot of a boiler, and particularly that of a round construction, is the next point to be considered. Careful tests have demonstrated that the best results in both economy and efficiency are obtained from a deep clean fire. When a shallow one is maintained too much air is enabled to pass through the coal, thereby reducing the temperature in the combustion chamber, carrying off a large share of the sensible heat and

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reducing the efficiency. Heating engineers call this condition "air excess" or "loss due to air excess," and it is estimated that as much a loss as thirty per cent may occur in this manner. To overcome this evil effect, a heating boiler or furnace should therefore have a fire-pot at least ten or twelve inches deep measuring from the grate to the bottom of the fire-door.

Fourth: There should be a sufficient length of fire travel to absorb in the heater all the heat units possible in the burning gases or products of combustion. A boiler in which the smoke and gases pass directly through front to rear and then out into the chimney is, owing to its construction, a cheap one to build, and it can be and is sold at a low price to the consumer. Such a type is frightfully wasteful of fuel and is sure to prove expensive in operation. An abundance of direct heating surface, that is, surface against which the incandescent light from the fuel shines, is a good feature to be embodied in a boiler. However, unless accompanied with the proper indirect or flue surface it does not prove an economical advantage. A boiler in which the smoke and gases are obliged to pass two or three times in and out among the flues, impinging at right angles against the heating surfaces at every turn, is sure to prove economical in service.

The above suggestions cover the principal points which make a heating boiler effective and economical in operation. There are other minor ones which, while of assistance in this respect, are of secondary importance to those mentioned. As stated before there are many rather inexpensive changes (considering the saving secured by increased efficiency) which may be made by remodeling some of the heating systems now in use and in our next article we shall discuss and illustrate some of these, offering suggestions whereby certain work may be improved to advantage.

Notes on School Plumbing

By A. C. Shaver, Inspector of Plumbing

SANITATION in our public schools is receiving far more consideration than at any time in the history of architecture. Not only is this true in regard to the modern systems of heating and ventilating, but also in the wonderful improvement in plumbing, both as regards the drainage system, water supply and fixtures. While formerly plumbing fixtures were placed in badly ventilated, poorly lighted, out-of-the-way places and used only as a necessity, they now occupy a more prominent place and have become a luxury as well as a necessity.

When it comes to a question of plumbing, the schools where the boys and girls of today are learning the responsibilities of the men and women of tomorrow, it ought to be a self-evident proposition that the best can be none too good. A city's educational institutions should reflect the very highest state of knowledge and practice of sanitary engineering—partly because they are educational examples of public buildings as well as places where education is imparted; also because children have no power of choice in the design or construction of the plumbing in the schools they attend. The municipality is morally responsible for the health and comfort of the children who attend its places of public instruction.

It is not enough that the plumbing fixtures be sanitary; they must be such that the children take pride in them and feel a sense of responsibility in keeping them clean. The public drinking cup has always been a source of trouble on account of the possibility of the spread of disease, but this has been overcome by the introduction of the bubbling pedestal drinking fountain in which no cup is used; the child, leaning over, drinks out of a bubbling stream of water, no part of

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the lips coming in contact with the fountain. The improvements in plumbing fixtures have driven out the old latrine closets and the more antiquated systems with their large fouling surface, and have created a demand for the more sanitary and up-to-date work; the individual, seat-action, syphon jet closet, with its tank and bowl of vitreous ware, is probably giving the best satisfaction, and when installed in a well-lighted, well-ventilated room is a model of sanitation. If the privilege of using modern fixtures in a clean, ventilated room shall teach our children anything toward cleanliness and care of property and do anything toward raising the standard of sanitary knowledge, any extra amount paid is well invested. The policy of putting high-grade material in rooms to be used for toilet purposes has often been assailed by unthinking persons, and probably often will be; but it is certainly a step in the right direction, as it is a saving in repairs, length of service and the ease with which it is kept in a clean condition.

Owing to the nature of the waste that enters the urinal, it is the most difficult of all toilet-room fixtures to keep in a clean and sanitary condition, and the foul air noticed in many public toilet rooms is due largely to this fixture; but this can be overcome by the proper selection. A urinal should be of a non-absorbent material such as slate or solid porcelain, and the water so delivered as to have a scouring effect on all parts; the local vent so arranged as to draw the air downward across the bowl or trough, as the case may be, and exhaust back of the urinal slab in a foul-air flue installed for that purpose. With this installation we do not get the foul odors, as they are drawn downward and never reach the level of the face.

Keyt's Sanitary Basin Plug

The wonderful improvement in the manufacture of plumbing goods in recent years is the result of the movement towards cleanness and more healthful conditions in our homes, offices and public places. In the design of lavatories it has been necessary to furnish the fixtures with a "safety" to prevent the

overflow of the bowl and consequent damage to the floors and ceilings below. While this object has been accomplished with more or less success, the result has been in every case that an additional chamber has been supplied for the accumulation of filth, giving rise to those disagreeable odors, the blame for which is commonly laid upon the trap. The real reason, however, lies in the presence of a chamber where the dirt can gather and

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which is so placed that the services of a skilled workman are required for the removal of the filth.

For the "Patent Overflow" type of bowl, i. e., the one with chain and rubber stopper, most commonly used as it is cheapest, is "Keyt's Sanitary Basin Plug," features of which are as follows:

1st. The inner tube containing the strainer projects below the openings into the overflow chamber so that the dirty water discharged when the stopper is removed, passes directly down into the trap and cannot possibly run back into the overflow chamber of the bowl. This construction prevents the accumulation of filth in the lower portion of the overflow chamber, which is largely responsible for the disagreeable odors so common to this type of bowl, when fitted with the old style plug.

2nd. The inner tube is easily removed without the need of a skilled workman, thereby removing the strainer and leaving a clear passage way so that the trap may be cleaned in case it should become clogged.

3rd. This plug is made in sizes to fit any stock bowl of the patent overflow type, so that its use need not interfere with or be any consideration in the choice of the bowl itself.

A company has been incorporated to handle the Keyt plug and offices have been established in the Monadnock building, San Francisco.

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California's School Houses.

An illustrated pamphlet of 150 pages entitled "School Architecture and School Improvement in California" has just been issued by the Superintendent of Public Instruction at the particular request of the Tahoe convention of City and County Superintendents. It has a beautiful colored poster cover, showing a real California school in the Mission style, and as printed by the State Printing office is a fine example of mechanical art.

This booklet is designed primarily for school trustees; but it is equally interesting to all persons interested in public education. Its object and spirit is best shown in the introduction, as follows:

"It is almost as cheap to build a beautiful school house as an ugly one—if we know how. California, like old Greece, is a land of beautiful things. Sun and sea and mountain, streams and trees and flowers conspire to make it a place delightful to mankind, inspiring to the painter, the poet, the musician, attractive to all the world. This beauty is a practical asset of vast importance to the State. Our California landscapes must become famous for their tasteful and harmonious schools, everywhere, and not outraged by dreary stables for school houses, slovenly barnyards for school grounds. We must not allow our little girls to absorb slatternly lessons at the school. We must not allow broken windows and unkempt surroundings at the school to infect our little boys and make them grow up shiftless, ne'er-do-wells. Prosperous people find it profitable to have tidy and well-kept houses, fences and grounds. Our schools, supported by the public, should certainly carry an air of prosperity."

Engineer Holmes Wants a Royalty.

Howard C. Holmes, an engineer, has notified the State Board of Harbor Commissioners, at San Francisco, that he expects to receive a royalty at the rate of 30 cents a linear foot on every concrete cylinder used in the construction of piers 36, 38 and 40, and in the approaches to piers 34, 36 and 38. He has requested the board to withhold from the Associated Contracting Company the sum of $19,541.40, the amount of his claim for royalty.

When Holmes was engineer of the harbor commission, he and Carl Uhlig, one of his assistants, secured a patent and collected royalties on the concrete cylinder that they used in the construction of state wharves. The present harbor commission does not believe that the cylinders used in the piers named by Holmes are any infringement of the Holmes patent, inasmuch as an altogether different principle is involved. The load in the Holmes patent is carried by

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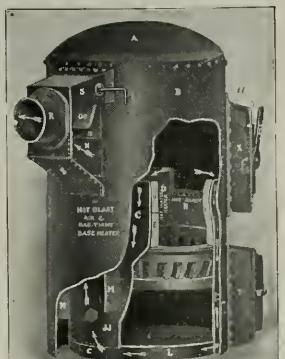
the center pile and the concrete placed around it merely serves as a protection against the teredo. No pile has been used in the cylinders on which Holmes claims royalty. They are merely solid concrete pillars and are built by a method covered by a caveat secured by Ralph Barker, the present engineer, in the name of the State of California.

Holmes contends that his patent covers any cylinder. The matter will probably be settled in the courts and is entirely an affair between Holmes and the contractors.

Consistency

He sat at his desk, opening his morning mail, when I entered his office, and had a stack of mail eight inches high. Among the letters were many circulars, catalogs, circular letters, etc., nearly all under two-cent stamps to convey the impression that they were "honest Injun" letters. Every one of these letters, circulars, etc., were thrown into the waste basket, not one of them being read. Finally, he finished his mail, and after sending the letters to the various departments, he turned to me with the remark: "We have determined to change our method of advertising this year. We are going to send out circulars and write soliciting letters, and send out thousands of handsome catalogs instead of advertising in the trade papers." — The National Advertiser.



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By the Way

Some Industrial Information Worth the While

A Strikingly Beautiful Marble

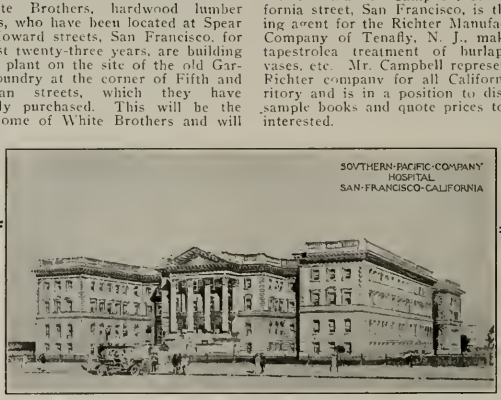
Architects in search of something real new in marble will undoubtedly find what they are looking for in the Portola marble now being quarried by the Columbia Marble Company of San Francisco. This new line is bound to meet with favor, for it is unlike anything heretofore marketed on the Pacific coast. It is a delicate buff color and beautifully marked. It is absolutely sound and takes a polish like onyx. Like all the Columbia Company's product it is quarried in Tuolumne County, California. For bank counters and wainscoting Portola marble would seem to be the very thing architects have been looking for. It is to be used in the interior of the Union Trust Company's new home, also the main stairways of the Olympic Club building and the entrance of the new De Young building. Some beautiful sample panels of the marble may be seen at the company's display rooms at 268 Market street, San Francisco.

White Brothers to Move.

White Brothers, hardwood lumber dealers, who have been located at Spear and Howard streets, San Francisco, for the last twenty-three years, are building a new plant on the site of the old Garratt foundry at the corner of Fifth and Brannan streets, which they have recently purchased. This will be the new home of White Brothers and will be a great improvement over their old yard as the new location will afford double the space of the block they now occupy. This change will be the third White Brothers have made since they commenced doing business under the present firm name in 1874. Originally they were located in the Gore block at California and Market streets their store running from Market street through to California street. The building in which they were located at that time had been, previous to their occupancy, the terminal station of the steam cars that used to run out Market street. This place of business in a few years became too small for the growing needs of the concern and they moved to 13-15 Main street, their store running through the entire block to Spear street. Here they remained for over ten years, moving in 1887 to Spear & Howard streets. White Brothers expect to have their building and yards at Fifth and Brannan streets completed early in June.

Richter Company's Selling Agent

Mr. Alexander Campbell, of 25 California street, San Francisco, is the selling agent for the Richter Manufacturing Company of Tenafly, N. J., makers of tapestrolea treatment of burlap, canvases, etc. Mr. Campbell represents the Richter company for all California territory and is in a position to distribute sample books and quote prices to those interested.



This cut shows the new **Southern Pacific Co's. Hospital,** D. J. Patterson, Architect, as it will look when the west wing is completed. The main building, east wing, annex, and the power house are all faced with **"Golden Gate Sandstone"** brick, made of sand and lime at Antioch. The new wing will require 250,000 of these brick for the facing. You know the **Southern Pacific Co.** buys the best of materials, hence our brick were specified. We also manufacture at Stockton all kinds of Clay Pressed brick —Enamel, Mat Glazed, Buff, and Fire. **GOLDEN GATE BRICK CO., 660 Market St.**

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There is a screen for both the upper and the lower sash. When the window is in its ordinary position the screen is concealed, and out of the way.

The windows—both upper and lower —may then be opened, reversed, and placed at any angle. The windows also slide up and down.

When either window sash is raised or lowered as the case may be, the screen follows it affording complete protection and perfect ventilation. Either screen may be used and operated separately. To place either window or screen in any position requires but an instant and almost no effort.

In rainy or foggy weather, so destructive to screens, the Hipolito self-regulating roller screen is completely protected from moisture. It will not wear out in years of use. It does not catch dirt and dust. It is always clean. It is claimed that while the Hipolito self-regulating roller screen and reversible window costs but very little more than the ordinary window and screen, the difference is far more than made up by its superior advantages in construction, durability, convenience and safety.

Second National Conference on City Planning.

At the invitation of the Rochester, N. Y., Chamber of Commerce and the Civic Improvement Committee of that city the 1910 national conference on city planning will be held at Rochester May 2d to 4th.

American cities are being aroused to the necessity for a city plan, and for the prevention of congestion of population. Many cities have plans; other are getting them; a few are following them out. Why it is imperative to adopt a city plan is becoming secondary in practical importance to how the city plan, once adopted, can best be carried out.

The purpose of the conference this year is not primarily to continue the campaign of education, nor to increase the literature which makes up the already weighty argument for the necessity of planning American cities, but the conference is a gathering of experts called because of their intimate knowledge of a specific subject to make a concrete contribution to the science of city planning.

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Steel Inspection

The importance of steel inspection cannot be too strongly emphasized and architects are safeguarding their own reputation when they insist upon proper tests being made of all structural steel before it is placed in position. Shop inspection is not always sufficient. The steel should be examined on the ground both before and after it has been riveted and tied into the frame work. Smith, Emery & Company feel that they have succeeded in establishing in San Francisco an inspection and testing establishment second to none in equipment in the United States. The company's new iron and steel inspection catalogue, just issued, contains much information of value of which the following is an abstract:

"Mill inspection of structural steel consists of analyses of melts, tensile and bending tests of pieces cut from finished beams, plates, angles, rods, etc., examination for surface defects, gauging, checking of weights and melt numbers, supervision of shipping, etc.

"Special attention is given to the laying out of the work in the shop, punching, drilling, reaming, assembling of parts, final finish, cleaning, painting and shipping.

"All field connections checked with drawings.

"We have a corps of local metal inspectors who are assigned to Pacific coast shops, foundries and pipe works whenever orders are to be executed.

"Inspection performed and reports made in same manner as at Eastern shops.

"We supply experienced inspectors and engineers to supervise the erection of steel and concrete structures, and for the purpose of reporting upon work in progress or structures already completed. This inspection consists of examination of all materials going into the structures, and physical tests and analysis when necessary, the examination of all work in progress and the interpretation of specifications and plans."

$21,000 Saved on Street Work Contracts

The lot owners of Dingee park at Redwood City have been saved $21,000 in letting the contract for street work. This money, which will be returned to the various owners shows what can be saved on work of this kind ,when tract developers are financially able to promise the cash to the successful bidder. Bonds for this work were issued by the city trustees of Redwood a few weeks ago and were immediately taken up by Baldwin & Howell, acting for their clients. Approximately $100,000 in gold coin was turned over to the city treasurer by this concern and bids for the street work were called for with the distinct understanding that the work was to be paid for in cash, and that the entire amount necessary was in the vault of the treasurer.

This fact brought bids from every locality, and in the competition the $21,000 was saved. The total of the two contracts figured approximately $88,000, which was 20 per cent less than the price estimated by the city engineer previous to the issuance of the bonds.

The bids ran as follows: Grading, 1c per sq. ft.; macadamizing, 5 3-5c per sq. ft.; sidewalks, 10 7-16c per sq. ft.; curbing, 31 1-2c per lineal ft.; gutters, 21c.

Class "A" Plumbing

The firm of Low & Anderson has installed the plumbing in fully a dozen residences in Oakland, Berkeley, Alameda and Piedmont, designed by Architect C. W. McCall, notably the Osgood, the Williams, Drake, Dorward, Whitehead, Senram, and the Sigwart Apartments, and are about to start on another high-class residence in Piedmont, for the same architect. Low & Anderson have been engaged in business in Oakland for eight years, and in that time have built up a reputation for doing first-class work.

SPECIFICATION WRITER—A first class architectural specification writer and checker desires employment. Pacific Coast preferred. Address William G. Bell, 611 Frederick St., San Francisco.

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Modern Lettering

"Modern Lettering—Artistic and Practical," assays the subject from the practical standpoint from cover to cover. The author, a man of experience and of artistic temperament, boldly sets forth his ideas and propounds his methods in concise language. Directions even to minute details are given, all of which are valuable to the student.

The Roman letters taken as the fountain head of all present systems, are exhaustively dealt with. Their construction is treated in the text, letter by letter, and the author's methods of drawing the "Modern Roman" alphabet are delineated in six full-page plates.

"Modern Lettering" embraces a course for artists, architects, sign writers and decorators, the Construction of Pen and Ink Designs for Commercial Uses, Advertisements, Letter Heads, Business Cards, Memorials, Resolutions, etc., by William Heyny. With 35 plates, drawings by the author. New York: William T. Comstock. Oblong volume, cloth; 136 pages, 7 x 10 inches. Price, $2.

Books for Carpenters

Two pocket books of considerable interest to carpenters have recently been published by the Industrial Book Company, of 178 Fulton street, New York, and may be had upon receipt of the price, 50 cents per copy. One of the volumes, "Practical House Framing," contains a simple explanation of the best methods of laying out and erecting baloon and braced frames. The other book is entitled "The Practical Carpenter." Both were written by Albert Fair, of New York.

Church Structure "Unfair"

The Pacific Coast Lumber and Milling Company of Oakland is having its troubles with the labor unions. Manager Kendall declared his plant an "open shop" some time ago, and the product is now being declared "unfair" and wherever used the union men on the job are promptly called off and the work is "tied up." The new structure of the Grand Avenue Christian Church of Oakland has been declared "unfair" by the union carpenters and by the Building Trades Council of that city, and all workmen having union affiliations have been ordered to stop work on the building, under penalty of having their union cards revoked.

This action was taken because some of the lumber used in the construction of the building by the contractors, Eliel & Innes, was purchased from the Pacific Coast Lumber and Milling Company.

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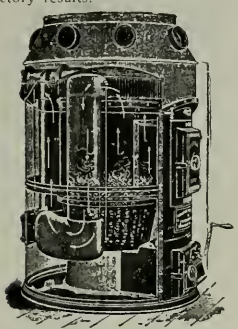
One of the essentials, in the modern residence, is a system of heating that is dependable; otherwise, there can be but little comfort for the occupants of the house.

The Monroe Foundry & Furnace Company, of Monroe, Michigan, have solved the heating problem with the "Floral City King Furnace," which embodies the various features necessary to ensure satisfactory results.



The coast agents for the company—The Geo. W. Schmitt Heating and Ventilating Company, of Oakland, have installed this furnace in several of the McCall residences in Alameda county, and in every case it has given satisfaction. Mr. A. F. Gimball, in whose residence the Schmitt company placed one of these furnaces, said, recently:

"The furnace gives perfect satisfaction."

Send for This Booklet

C. F. Weber & Co., of San Francisco, the manufacturers of "Hyloplate Blackboards" have just issued a very attractive little booklet under the title of "Good Blackboards." This publication contains half-tone photographs of a great many leading school buildings in California and Nevada which are equipped with their blackboard material. The work shows the widespread popularity of the blackboard, and the facsimile letters which accompany the photographs of the school buildings, give conclusive evidence of the satisfaction to the users.

The booklet is attractively printed in two colors and will be mailed free upon request to any one interested in the subject of good blackboards.

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A Garbage Chute That is Sanitary.

(See Illustration in Advertisement on Page 132.)

Architects will find it to their advantage to investigate the Bradshaw sanitary garbage chute and can which is on exhibition at 77 Sutter street, San Francisco. Mr. Bradshaw is a San Francisco contractor, and his invention is the result of several years of study. As a builder he has been in a position to appreciate the need of a sanitary garbage chute. There are plenty of chutes and cans on the market, but none of them are sanitary. They are in most cases a menace to public health.

The strong point in favor of Mr. Bradshaw's invention is the fact that opening and closing the door of the chute on any floor of the building causes water to flush the interior of the chute, and thus thoroughly cleanse it of all garbage or foreign matter. The chute may be used for ashes as well as garbage and swill. The garbage can has a reinforced wire bottom, allowing the water to percolate through the refuse into the cesspool and sewers. The garbage is thus clean and odorless.

The chute is made of galvanized iron or can be manufactured of enameled tile or vitrified pipe. The cost is surprisingly small. A number of prominent architects already have specified the chute. The San Francisco Board of Health has taken the device under investigation with a view to encouraging its use from a sanitary standpoint.

The local selling agent is E. L. Williamson of 3552 Eighteenth street, San Francisco.

Architectural League of America.

The Architectural League of America held its annual convention recently at the New Willard Hotel, Washington, D. C. The convention was called to order by the president, Frank C. Baldwin of Detroit.

The following officers and committees were elected for the ensuing year: President, Frank C. Baldwin; vice-president, Emil Lorch; corresponding secretary, M. R. Burrowes; recording secretary, E. A. Schilling; treasurer, Adolnh Eisen, Oscar Gottesleben, Dalton R. Wells; permanent secretary, H. S. McAllister, No. 729 15th street N. W., Washington, D. C. Committees: Education, Newton A. Wells, chairman, Urbana, Ill.; Mr. Fischer, Chicago, Ill.; Prof. C. A. Martin, Cornell University, Ithaca, N. Y.; traveling scholarship, Percy Ash, chairman, Washington, D. C.; Albert E. Skeel, Cleveland, O.; S. C. Gladwin, Cleveland, O.; University fellowship, Emil Lorch, chairman, Ann Arbor, Mich.; August L. Headman, Philadelphia, Pa.; J. T. Comes, Pittsburg, Pa.; publicity and promotion, Jesse N. Watson, chairman, St. Louis, Mo.; Alfred S Alschuler, Chicago, Ill.; Mr. A. H. Chapman, Toronto, Canada.

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A Successful Elevator Industry

THERE seems to be a wrong impression abroad in regard to the elevator situation in San Francisco. The fact that the large companies are meeting with keen competition is well known, and because of the close figuring that has marked the letting of practically all the elevator contracts in San Francisco since the fire, the impression prevails that these companies are doing all the business. As a matter of fact, however, the ones who have profited most are those who have declined to go into the open market and bid. They have endeavored to work up a comfortable business by taking only such contracts as would bring a profit. If there was no profit in sight the job has invariably been passed up to the "trust."

One of the most successful of the smaller elevator concerns in San Francisco is the Wells and Spencer Machine Company of 173-177 Beale street. Both Mr. Wells and Mr. Spencer are experienced elevator men and by combining this experience with practical business sense they have made good. Messrs. Wells and Spencer were connected with the Cahill & Hall Elevator Company at the time it was an associated company of the Otis corporation. The firm began business in September, 1906, in the present plant at 173-177 Beale street—a frame structure with exterior of galvanized iron. It was one of the first buildings to go up in that section of the city after the fire, being within a stone's throw of the Western Iron Works, which latter plant is also of corrugated iron and was the first iron foundry to rise following the big conflagration.

The Wells and Spencer Company specialize in freight elevators, sidewalk lifts and dumb waiters. Many of the most prominent buildings in San Francisco and Oakland are equipped with machines turned out by this firm. The rebuilding of the hotel and apartment house section of San Francisco has opened a splendid field for dumb waiter installations and it is no exaggeration to say that the Wells and Spencer Company has done as much, if not more, of this class of work than any of its competitors. The Wells and Spencer dumb waiter is self-sustaining and cars are made to fit any size hatchway and of any kind of hard wood. If desired they can be provided with stationary or folding shelves so that the car may be used for hoisting light barrels or boxes. The counter weight and guides are arranged to take up the least possible space.

Besides apartment houses and hotels the dumb waiters are used quite extensively in restaurants and residences.

The Empire apartments are equipped with a large trunk hoist capable of lift-

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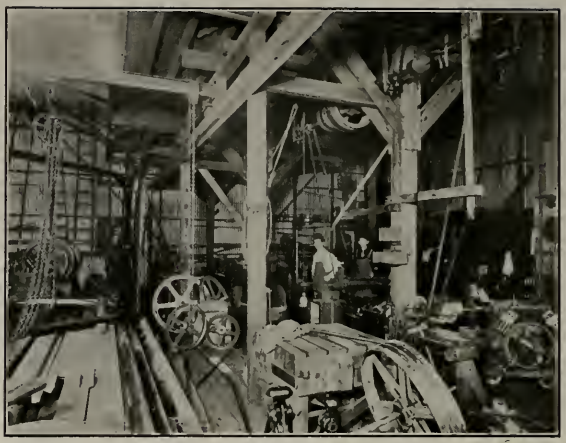
An Index to the Advertisements

	Page
Abrahamson & De Gear	145
Acme Cement Plaster Co.	161
Adams & Hollepeter	100
Amweg, Frederick J	123
Anderson, G. J	122
Armitage, P. C.	142
Armstrong Cork Co	152
Art Metal Works	111
Bagge, W. H., & Son, Inc.	27
Bank Equipment Co.	144
Barmann, A.	158
Bluxome & Co	111
Boyd & Moore	129, 154, 141
Brady, C. A	145
Braun, J. G.	20
Breite, W. W	123
Bridgeport Wood Finishing Co.	23
Brittain & Co.	20
Broadway Central	150
Brode Iron Works	28
Building Material Co., The, Inc.	6
Bullard, E. D.	27
Butte Engineering Co.	101
California Art Glass Works	21
California Bldg. Materials Co.	124
California Mantle & Tile Co.	105
California Nursery Co.	143
California Photo Engraving Co	151
Calif. Valve & Air Brake Co.	135
Callaghan & Manetta	30
Canadian Bank of Commerce	142
Carnegie Brick and Pottery	15
Central Electric Co	106
Century Electric & Fixture Co.	161
Charraud, Chas. M.	113
City Plumbing Co.	105
Clarke, D. Ross	151
Clinton Fireproofing Co. 2d cover	
Clover Leaf Machine Co	8
Coleman, Alex	107
Columbia Marble Co.	10
Connell, J. F.	158
Cook, H. N. Belting Co	30
Corrugated Bar Co	26
Crane Company	31
Crinnion, F. W.	167
Crowe, P. T. & Co	140
Dalziel, Robt., Jr. Co	103
Dean Reversible Window Co.	17
De Laval Dairy Supply Co	122
Deluchi-Shufelt Co.	167
Denny-Renton Clay & Coal Co	15
Diamond Brick Co	14
Dieckmann Hardwood Co	32
Dietzgen, Eugene Co	9
Doak Sheet Metal Co	128
Dodd's Interlocking Block Co	133
Doell, Carl & Co.	126
Ducommun Hardware Co.	160
Duncan & Renfisch	151
Dunlevy & Gettle	149
Dyer Bros	11
Eastern Reinforced Cement Tray Co	145
Elam & Son, Thomas	126
Electric Railway & Manufacturing Supply Co 4th cover	
Elevator Supply and Repair Co	129
Engstrum, P. O. Co	128
Enos Co., The	104
Esterly Construction Co	122
Farrenkopf & Sons, C	150
Fee, Grant	144
Fish, Ferdinand	126
Fisher & Wolfe Company	118
Follansbee Bros. Co	102
Fortin, V. L	166
Foster & Vogt	146
Fuller, W. P. Co.	17, 127
Gilley-Schmid Co	107
Glidden Varnish Co	133
Golden Gate Brick Co.	108, 147
Golden Gate Structural and Ornamental Iron Works	27
Goodyear Rubber Co.	138
Grant Gravel Co	112
Green, H. B	29
Greenleaf, George R	105
Gutleben Bros	137
Haines, Jones & Cadbury Co.	127
Hanbridge-Loyst Elec. Co.	107
Hanley & McCulloch	138
Hansen & Johnson	149
Hart Heater Co., The	101
Haslett Warehouse Company	132
Hipolito Screen & Sash Co.	17
Hock, Charles H.	145
Holmes Disappearing Bed Co	114
Hotel Normandie	150
Hotel Sacramento	152
Howard, E. A. & Co	5
Howden, Robert	164
Howe Scale Co.	29
Hoyt Bros.	151
Humphrey Co.	21, 168
Hunt, Robt. W. & Co	113
Inlaid Floor Co	124
Johnson, J. A. M.	122
Johnson, S. T. Co	124
Jones, Robt H.	160
Kanawha Chemical Engine Co.	158
Keithley, E. A	7
Kelly, J. F. Co.	165
Keuffel & Esser Co	111
Keystone Boiler Works 2d cover	
Keyt's Sanitary Basin Plug Co.	156
Knudsen, P. J., Co	121
Kruse, J. H	139
Lamson Cons. Store Serv. Co	134
Lange & Bergstrom	111
Lathrop & Hill	122
Larson, Louis J	149
Lemos Bros.	114
Leona Chemical Co.	28
Lilley & Thurston Co	31
Lindley Oil Burner	103
Los Angeles Pressed Brick Co.	14
Low & Anderson	164
Llewellyn Iron Works	168
Lynch, A. & Co	137
Mackenzie Roof Co	109
Maddern, Henry T	107
Maher, W. E	132
Makin, Wm	167
Mailing Case Mafg. Co	22
Mangrum & Otter	32
Markley, James E	27
Marshall & Stearns Co	120
McEnerney, C. L	123
McKay, N. H	137
McWhirter & Drake	145
Mechanical Dust Suction Co.	113
Metropolis Construction Co.	151
Meurer Bros. 3d cover	
Montague, W. W., & Co	5
Morrin, Thos	123
Morrison Electric Co	147
Mott Iron Works	137
Moulin, Gabriel	142
Munich Art Glass Co. 3d cover	
Municipal Eng. & Con. Co.	112
Musto Sons-Keenan Co	11
National Furnace Co.	125
National Lynwood Co. 3d cover	
Neece, The Geo. F	137
Nelson, N. O., Mfg. Co.	31
Nielsen, J. C.	163
Norris & Son, J. A	22
Northwest Bridge Works	148
Northern Clay Co.	14
Newbery-Bowers Electric Co.	157
Olympic Roofing Co.	116
O'Mara, J. E	105
O'Rourk, T. P	27
Pacific Blower & Heating Co.	167
Pacific Coast Asbestos	151
Pacific Fire Extinguisher Co.	154
Pacific Laboratories	149
Pacific Ornamental Iron Works	160
Pacific Photo and Art Co.	138
Pacific Rolling Mills	28
Pacific Tank Co.	30
Paraffine Paint Co.	116
Parratt & Co.	2, 3
Parker-Preston & Co., Inc.	19
Petersen, H. L.	146
Petersen, P.	149
Peterson, Bolin & Anderson	163
Peterson, Nelson & Co.	149
Pfister & Co.	147
Pioneer Roll Paper Co.	125
Plaster Block Co	119
Port Costa Brick Works	14
Power & Pike Co.	107
Priddle, A. 2d cover	
Prymont Brick Co.	14
Ralston Iron Works, Inc	27
Ransome Concrete Co	8
Reardon Crist Const. Co	137
Reinforced Concrete Pipe Co.	136
Reliance Ball-Bearing Door Hanger	135
Richter Manufacuring Co.	124
Rickon-Ehrhart	31
Rischmuller, G.	144
Roebling Construction Co.	109
Ruud Manufacturing Co	23
Russel & Erwin Mfg. Co.	18
Samuel, H. D., Co.	122
Samson Cordage Works	137
Santa Fe Lumber Co.	146
Sartorius Co	29
Schastey & Vollmer	126
Schmitt, Geo W.	166
Self-Cleaning Filter Co.	135
S. F. Comp. Air Cleaning	13
S. F. Cornice Co.	159
S. F. Metal Stamping and Corrugating Co	22
Silva Heating & Plumbing Co.	106
Simonds Machinery Co	137
Smith, Emery & Co.	110
Southern Pacific Co	153
Spencer Desk Co	144
Standard Construction Co.	27
Standard Engineering Co	149
Standard Supply Co	149
Standard Varnish Works	119
Stanley Works	129
Steiger & Kerr Stove and Foundry Co	144
Strable Manufacturing Co.	139
Sturgeon & White	145
Sutton, John G., Co	105
Tay, George H	127
Taylor & Johnson	9
Thomsen, John	166
Thomson Bridge Co.	16
Tomasello, S. & Co.	128
Tozer Company	24
Trussed Concrete Steel Co.	119
Tucker, W. W.	146
Union Fibre Co	19
United Glass Works	12
United Studios	162
Valente & Leveroni	145
Vacuum Eng. Co	148
Van Emon Elevator Co	1
Vulcan Iron Works	28

[Index Continued on Page 120]



Interior of Wells & Spencer Machine Shop

ing 250 pounds. The splendid residences of Samuel Bugbee and Harry Holbrook have dumb waiter installations. Sidewalk elevators have been installed in the Musto building the Josslyn building, the Henry building and the Isaac Upham building. Passenger and freight elevators have been installed in the Sloane building on Mission street, and freight lifts in the Anglo-American, G. M. Josslyn, Ghirardelli, and other prominent buildings, also three hydraulic rams in the Mills building, a ram passenger elevator in the residence of the late D. O. Mills in Milbrae, a steam hydraulic machine in the National Ice Cream Company's building on Guerrero street, a 6000-pound electric freight lift in the Peerless Auto garage at Van Ness avenue and Locust street, passenger elevator in the residence of Mrs. S. T Alexander in Oakland and freight lifts for W. T. Veitch and Robert Dalziel, Jr., also of Oakland.

The firm makes a specialty of caring for and keeping in good running order both passenger and freight elevators, of any grade or make Many elevators are regularly inspected by them and the fact that the company's inspection department is growing larger all the time is good evidence that their work is satisfactorily done. It is safe to say that few San Francisco industries of the modest proportions of the Wells and Spencer Company have enjoyed greater prosperity in the past four years than has this aggressive concern.

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ADVERTISERS' INDEX — Continued from Page 17

	Page
Wadsworth, Howland & Co.	139
Wagner, Ferdinand	122
Warren Construction Co	134
Waterhouse & Price Co.	154, 155
Waters & Co.	142
Watson Roof Co., The	4
Weary & Alford Co.	32
Weber, C. F.	24
Wells & Spencer Machine Co.	151
Wellington, Geo. J.	144
Western Asbestos Magnesia Co.	22
Western Building Material Co.	4th cover
Western Builders' Supply Co.	25
Western Iron Works	29
White Bros.	109
Williams & Carter Co.	21
Williamson, E. L.	132
Wilson, W. H., & Co.	27
Woods & Huddart	32
Wood Lumber Co., E. K.	161
Wood, John, Manufacturing Co.	121
Yager Sheet Metal Works	145
Zeis, Oscar L.	164

Whittier-Coburn Co. to Handle the Glidden Products

The Glidden Varnish Company of Cleveland, Ohio, is now represented on the Pacific coast by the well-known house of Whittier-Coburn Company, with offices and shipping depots in San Francisco and Los Angeles. The Glidden products are known all over the world. The company has lately given especial attention to the development of materials for the protection and ornamentation of concrete and steel buildings. Some of these products are briefly described herewith. Further details and handsome samples may be had upon application either at the home office or from the Whittier-Coburn Company.

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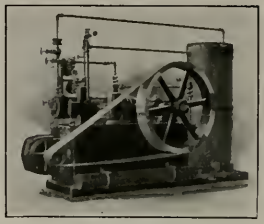

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Methods of Selecting School Architects

(From the School Board Journal)

THE most important preliminary step in the erection of a schoolhouse is the selection of a school architect. School boards will be especially interested in methods of choosing these important persons at this time of the year, when plans for the extension of school facilities are under way for the spring and summer months.

The selection of an architect for a schoolhouse that will be in all respects modern and economical means more than the hiring of an efficient general practitioner. It should mean a man with considerable knowledge of the principles of school architecture. Such men are readily available, for with the evolution of specialized construction the problems arising in buildings for scholastic purposes have been solved in recent years to an extent in that there has been developed a body of schoolhouse architects who know intimately the needs of a school building and whose plans and judgment can be accepted with security. Nevertheless, there are boards of education in every state who are willing to entrust to uninformed builders even the erection of high schools. This practice cannot be too severely condemned.

An expert schoolhouse architect will draw plans and specifications scientifically and in accordance with hygienic, scholastic and administrative needs of the school and the economic capability of the community. In letting the contracts, care will be exercised to secure the best materials and methods of construction at a minimum of expense. During the construction of a building a school board will have at its command the experience and knowledge of an expert who at all times endeavors to secure the efficient execution of plans, accurately and economically within the specifications. Most important, finally, in turning over a building to a school board, there always is included the responsibility for successful use, upon which depends the reputation of the planning and supervising architect.

Schoolhouse architects are employed by boards of education in one of three manners. There is, first, the architect who is permanently employed by the board of education, and known as the official schoolhouse architect. Then there is the architect selected by the board as the result of a competition. Finally, there is the architect who is directly employed for the planning and erection of one building, and who is dismissed upon the completion of the building.

For large cities, the architect permanently employed as an agent and representative of the board of education to prepare, plan and superintend the con-

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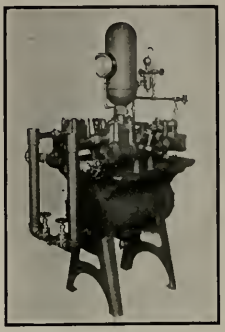

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FAN SYSTEMS A SPECIALTY

struction of all school buildings is best. Many larger cities of the country and a few of the smaller ones are successfully erecting all new buildings and making all repairs and changes on old structures under this plan. There have been created schoolhouse departments throughout the country, which, in an intelligent and scientific manner, are developing schoolhouse construction. They have standardized many ideas, until lately ignored; have developed types and styles of school buildings both beautiful and excellent; have reduced the work of each of their boards of education and special committees to purely the executive, and have taught the great lesson of economy and honesty in public building.

The competitive idea of choosing plans has its advantages and disadvantages. The latter seem to outnumber the former in that the best architects, unless specially invited in the program, rarely deem their entry worth while. Again, the plans submitted are plans to be accepted, and not always plans to be practically worked from. And finally, as in most cases, the plans are not kept within the limits of available funds, and when once accepted are practically destroyed in cutting and corrections. The principal argument advanced in favor of the competitive idea is that high types of plans are produced.

In small communities, where the constant employment of an architect is impossible, it is most practical to engage an architect for the planning of every new building. This allows, primarily, the free working out of ideas by the board and architect. Secondly, it draws on the class of school architects whose every building means so much added to or subtracted from a necessary reputation. It involves no other salary than the regular 5 or 6 per cent commission, and assures a careful consideration of local conditions and needs. It especially encourages co-operation between the architect and the professional factors.

PERSONAL

Architect A. H. Faber of Portland has removed from 213 Commercial block to 360 Ainsworth avenue, Portland, Ore.

Architect E. P. Whitman is a new arrival in Oakland. He has established an office for the practice of the profession at 1376 Webster street. He is a graduate of the Boston Institute of Technology, and for a time was employed in the New York office of McKim, Mead & White.

Resolutions Protesting Against Increase in Second-Class Postal Rates.

At a mass meeting representing the printers, publishers and allied interests, called to take action in regard to the proposed increase in second-class rates held on Thursday, January 20, 1910, at Chicago, the following resolutions were unanimously adopted, being an emphatic protest against a proposition so detrimental to the interests of the people.

"Whereas, An advance in rates would cause incalculable injury to every branch of the publishing and printing trades of the country, and would throw thousands of employes out of employment in the various branches of this industry, representing newspapers, trade journals, publishers, printers, type founders, paper-makers, engravers, ink manufacturers, press builders, machinery manufacturers, etc., having annually an output of $100,000,000 in Chicago alone, enter their emphatic denial that said interests cause any deficit whatever to the revenues of the government; therefore be it

"Resolved, By the united actions of the allied interests of the entire publishing and printing trades of Chicago, that we hereby register an emphatic protest against any movement or declaration coming from any source, which may have for its purpose any advance in second-class postal rates, the effect of which would be to seriously cripple the industry everywhere and greatly hamper every industrial development fostered through the instrumentality of publishing and printing.

"Resolved, That request be made for suspension of all action in order to give opportunity to submit argument.

"Resolved, That a copy of these resolutions be transmitted to the President of the United States, the Postmaster General, and to members of both houses of Congress, as expressing the views of the many trades concerned in maintaining present just rates on second-class mail matter.

"Resolved, That a copy of these resolutions be also sent broadcast to the press of the country and the aid of the same be asked in behalf of our many and varied interests."

Respectfully submitted,

W. Y. HARTMAN,
Chairman.

Attest:
W. C. KELLEY,
Secretary.

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Government Heavy Users of Concrete Machinery.

The Municipal Engineering and Contracting Co., of Chicago, Ill., on March 15th received the following telegram:

"Wire price and quickest Colon delivery four concrete mixers, two yards capacity, in accordance specifications and requirements. Washington order fifteen naught three naught three A, two right hand and two left hand. First mixer desired Colon within two months, others at intervals two weeks.

(Signed) "ISTHMIAN CANAL COMMISSION."

Reply—

"Can make first two machines thirty days balance of order in two weeks thereafter. Shipment should arrive Colon in twenty-five days after shipment from here.

"MUNICIPAL ENGINEER'G & CONTRACT'G CO."

March 17th—

"Your telegram fifteenth order follows for four mixers. Expedite."

The machines in question are the Chicago Improved Cube Concrete Mixers, hold 64 cubic feet, and when they are shipped, this will make twenty-seven 64 cubic foot mixers one 22 cubic foot, and one 17 cubic foot, which are in use in the Panama Canal.

The Lansing Wheelbarrow Co., of San Francisco, are the Pacific Coast Agents for these mixers.

A Successful Plasterer.

A young man from the Old World, William Makin, came to America and established himself as a contracting plasterer, choosing Oakland for headquarters, and opening an office in the Builders' Exchange.

In the nine months that have passed Mr. Makin has been given some large contracts and his work has given satisfaction.

The Estelle Miller residence; the Lurline Baths, the Goeway Building, in San Francisco; the five-story Thayer Building, in Oakland; the State House Hotel and the Mohr & Yorke Building, in Sacramento, are some of the largest of the contracts executed by Mr. Makin, and are conclusive proof of his ability.

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To Standardize Electrical Specifications

THE California Association of Electrical Contractors is making a great fight for better conditions in the electrical contracting business throughout the Golden State. One of the main objects sought is to standardize the bidding by persuading the architects to adoot uniform specifications. President W. S. Hawbridge offers the following excellent suggestions:

1—BIDS—Under this heading describe whether or not the owner reserves the right to reject any or all bids.

2—GENERAL—Under this heading include service board, switches, conduits, outlet boxes, cutout cabinets complete with panel boards and fuses, main feeders, subfeeders, circuit wires, switches, bells and telephones, annunciators, speaking tube, wire and appliances etc., and this contractor shall furnish all necessary labor and material to properly install all light and power telephone, etc., wiring in accordance with the plans and these specifications.

3—DRAWINGS—Under this heading it will be noted that certain classes of work, mainly larger classes of work, require a layout, and it will be well for the architects to specify that a layout of the conduit or circuit wires or both be made before the work is started.

4—SYSTEM—Under this heading describe whether A. C. or D. C. If A. C., single, two or three phase; two, three or four wire; 25-33-60 or 133-cycle. If D. C., 110-220 or 500 volts; two, three or four wire mains—this applying to both light and power service.

5—SERVICE CONNECTION—Under this heading it would be well for the architects to specify a certain locality, even though arbirtrary, where the main switch and cutont shall be located—this enabling the contractor figuring the job to figure from a given point of distribution, and, even if the architect is wrong in determining the point, it will probably be a small matter for an extra, if additional wire has to be run to another point in the building for service connection. In case of a central plant, the service connection can also be specified at the switchboard.

6—SERVICE SWITCHBOARD—Where it is located; number of switches it will contain; division, if any; description of the switches; description of switchboard. In the case of private house work, probably one main switch will do for the entire house, and no service switchboard will be necessary.

7—WIRE SHAFTS—In the large buildings it is necessary to provide at least one, and as many more wire shafts as possible, to enable the contractor to make a well regulated distribution of the circuits, and these wire shafts should be built sufficiently large for the requirements of the electricians.

8—MAINS AND FEEDERS—Describe the size of the main, if possible, or the number of lights controlled. For the feeders and sub-feeders, describe the panel boards, number of circuits which they will control, together with the lights on the same.

9—MOTOR CIRCUITS—Describe the number, H. P., size, where located, and whether the electrical contractor is to connect same with starter, or is only to run to a given point, and other contractors to connect the motors. Also state whether or not this contractor is to furnish the motors complete, connected up.

10—WIRING—Under this heading describe the fact that the building is to be wired for incandescent lamps, Nernst, Flaming Arcs, Tungstens, etc., with a certain number of watts on each circuit.

11—FANS—Under this heading describe where these are to be located, and whether or not to be furnished by the contractors.

12—WINDOW LIGHTING—Describe whether reflectors of a certain kind are to be furnished by the contractor, and if not how the circuits are to terminate.

13—DISTRIBUTION—The plans should show the outlets, and the architects should use the Standard Symbols to describe these outlets.

14—FIXTURES—Under this heading describe whether or not the contractor is to hang the fixtures. It would be well, however, if the architect is to have the letting of the fixture contract, to make a separate contract of the fixtures—however, on small stores, office buildings and residences, this can readily go in with the wiring specifications.

15—SPECIFIC LIGHTING—Here describe any special features of lighting which cannot be clearly shown on the plans.

16—WIRE—Size, quality, kind. National Electric Code will describe wire for the average contract.

17—CONDUITS—Describe kind and quality of conduit to be used, loricated, galvanized or sheradized, if rigid; Greenfield or equal if flexible, and BX cable if conductor. If a job is to be a mixed knob and tube and conduit job, describe where the knob and tube work will occur, and where the conduit work will occur.

18—INSTALLATION OF CONDUIT—Under this heading describe the construction of the building, and how it will be possible to erect the conduit, and whether or not the same will be concealed or open work.

19—LOSS OF POTENTIAL—This is an important point and should be gone into carefully, and the specifications written so that a test is required with all lights burning. A reasonable per cent should be allowed, and all honest contractors will be very glad to have a test made of their own work.

20—LAMPS—Who is to furnish and erect same.

21—OUTLET BOXES—Describe.

22—DROP CORDS—Furnished by whom, and describe.

23—FLOOR OUTLETS—Describe make and quality.

24—WALL OUTLETS—Describe make and quality.

25—CUTOUT CABINETS—This is a point which should be carefully described by the architect, as a great deal of discrepancy is found usually between what is desired and what is obtained in a finished job. If an architect does not have a standard panel board specification describing the various sorts of panel boards, it would be well for this architect to write to any of the panel board manufacturers for a specification on this important point.

26—CENTERS OF DISTRIBUTION—Describe here how built up and what is to be fed from the same.

27—METER LOOPS—Under this heading local conditions will govern somewhat, but, in the main, the contractor should leave meter loops ready for the installation of the meter by the outside company.

28—METERING PANELS—This will come under the same head as cutout cabinets, except that in case of large buildings, where metering panels are required, special note should be made of same.

29—ELEVATOR LIGHTS—Describe how far the contractor is to go toward furnishing the elevator lighting mains, fixture, etc., in cage.

30—SWITCHES—Under this heading describe whether switches are to be flush or open type, push button or snap, where located, control of lights for same and how mounted.

31—CONTROLLING LIGHTS—Under this heading describe any special control, such as 3-way or 4-way switches, or control which cannot be easily shown on the plans, which would embrace corridor lights, exit lights and similar lights which are ordinarily controlled from a remote point.

32—ANNUNCIATORS AND BELLS.

33—PUSH BUTTONS.

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35—INTERIOR TELEPHONES.

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48—CERTIFICATE OF PAYMENT.

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The Pacific Fire Extinguisher Company, well known all over the Coast as experts in fire protection, has recently strengthened its personnel and at the same time has added another department to its service. Besides handling the Grinnell Automatic Sprinkler the Company has taken up heating and ventilation work and electric wiring, etc. Experienced men have been placed in charge of each of these departments.

Messrs. Becker and Marshall are no longer connected with the Company in any capacity, and the northern office is now in charge of Mr. H. J. Lathey, succeeding A. F. Stone, with headquarters in Portland.

Mr. Winfield S. Davis and Mr. Burt L. Davis became active in the management of the Company as president and vice-president, respectively, while Mr. Curtis Clifford, formerly with the Company, is again with them in the capacity of secretary and assistant to Mr. Burt Davis. Mr. William Romaine continues as treasurer of the Company.

Mr. L. B. Krieger, who has for many years been connected with the Company, has been placed in charge of the California and Southern Pacific States as contracting engineer, with headquarters in San Francisco. Mr. Philip Gearhart retains the position of Western contracting engineer, with headquarters in Seattle. Mr. W. I. Evans will represent the Company in eastern Washington, Idaho and other northern sections, and his headquarters will be in Spokane, Wash.

Mr. H. C. Reid retains his position as head of the electrical department, while Mr. J. J. McGorry becomes the contracting engineer of the heating department. The Company has already taken a number of important contracts in heating and ventilating, one of the largest being the power plant, heating, ventilating and vacuum cleaning system in the $1,000,000 Bankers' hotel in Oakland. This is one of the largest contracts let on the Coast this year.

The Company intends to be more aggressive than ever before in going after the fire protection work. It will continue to have the exclusive agency of the famous Grinnell automatic sprinkler system. Recent sprinkling contracts include some very large work with the Monarch Lumber Company, and the Craig Mountain Lumber Company.

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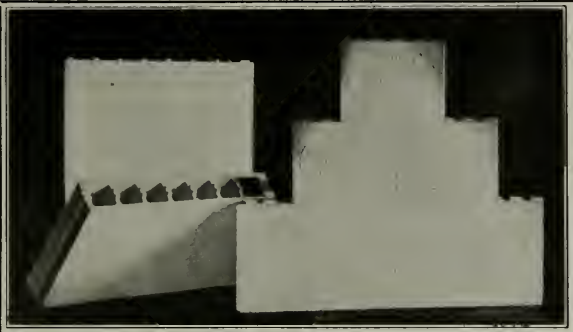

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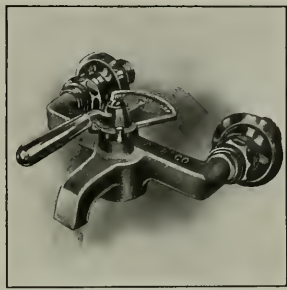

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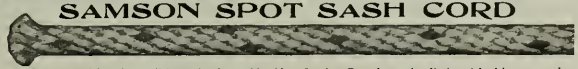

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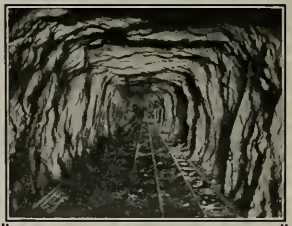

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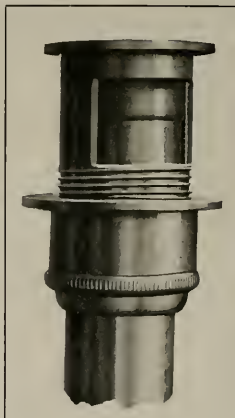

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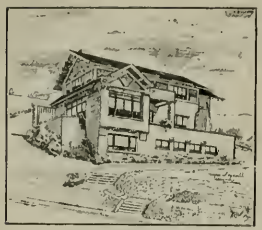

Residence of Mr. J. H. Fowler, Piedmont Knoll
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Builders of Artistic Homes.

ONE of the busy contracting firms in Alameda County is that of Peterson, Bolin & Anderson, General Contractors.

This firm has had the contract to build several of the artistic residences designed by Architect C. W. McCall, among them the J. H. Fowler, the Dr. Murray L. Johnson, and the Hughes residences, in Piedmont, the Mrs. Green residence in Alameda, and the Young residence in the Adams tract.

As to the quality of the work done by this firm, it is sufficient recommendation that they have been awarded so many contracts by so painstaking an architect as Mr. McCall, and have built, under his superintendence, some of the most artistic residences in Alameda County.

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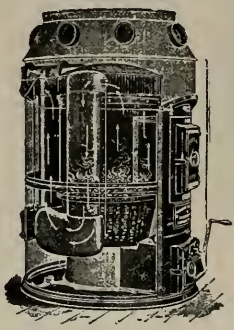

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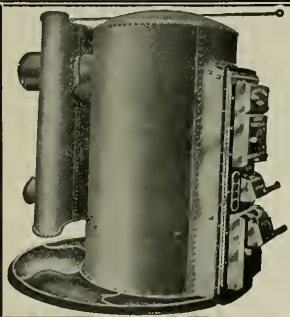

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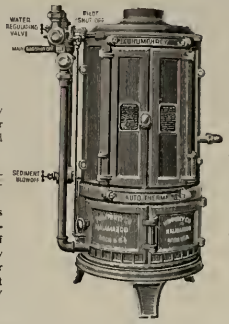

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